Financial Development, Legal Systems and SME Finance:

Cross-country Evidence

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Declaration

According to the Rules for Submission of Theses for Research Degrees, Section 8(a), the candidate is required to include in each copy of the thesis (including the electronic copy), a signed declaration of original authorship. I hereby declare my contribution to a co-authored publication that will be included in my PhD dissertation.

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Abstract

This thesis explores the impacts of financial development on SME finance by using a comprehensive database from World Bank with samples from 134 countries. It contributes to the research areas in both financial development and SME finance. In particular, it deepens our understanding of the significant role played by financial development on SMEs in terms of both demand (seeking finance) and supply (trade credit) for finance.

The thesis contains three pieces of empirical research on SME finance. First, this thesis provides literature review and some background statistics on financial development and SME finance especially in emerging economies, showing clear variations of SME financing patterns between emerging and developed markets and shed light on the important role played by financial development in financing SMEs. Second, this study investigates the effects of financial development and institutional framework on the access to external finance by SMEs. The primary results support the important roles played by financial development and institutional framework in the country where SMEs operate. Specifically, with financial development, SMEs are more likely to use formal sources of external finance (e.g. from both bank and non-bank institutions) than use informal finance (e.g. private), in terms of both short term and long term demand for finance. Last, this thesis analyses how financial development affects the supply of trade credit by SMEs to their customers. SMEs in those countries with a higher level of financial development provide more trade credit to their customers and vice versa, supporting the favourable effects of financial development on the supply of trade credit by SME as financial intermediary. Additionally, this study shows novel evidence on the moderating effects of institutional framework (i.e. legal systems) on the favourable role played by financial development in the supply of trade credit by SME.

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Chapter 1 Introduction

1.1 Research Background and Objectives

As a fundamental part of a dynamic and healthy economy, Small and Medium-sized Enterprises (SMEs) have significantly contributed to innovation, employment creation and economic growth in both developed and developing countries (Shen et al., 2009; Hussain et al., 2012; Ayyagari et al., 2014). It has also been widely acknowledged that access to finance is a crucial determinant of achieving business survival, growth and success (Arellano et al., 2012) and attaining a strategic advantage over their competitors (Beck et al., 2013) for SMEs. However, SMEs are more vulnerable to financing constraints than large firms in accessing capital markets due to their unique characteristics, such as a greater degree of information opacity, less capability of providing collateralisable assets and higher transaction and monitoring costs for lenders (Rostamkalaei and Freel, 2016) when financing SMEs.

Following on existing research on the important role played by financial development in promoting economic growth (e.g. Levine, 2005; Becker et al., 2012), this thesis investigates the impacts of financial development in SME finance in particular by using a comprehensive database from World Bank with samples from 134 countries. Such an investigation has become increasingly important and attracted attentions from both governments and practitioners where it has been widely accepted that a well-developed financial system and market would contribute to economic efficiencies by providing an efficient operating platform for both information providers and users

(Diamond, 1984), alleviating illiquidity risks (Levine, 1997) and diverting capital from unproductive to productive uses (Durusu-Ciftci et al., 2017). Indeed, SMEs, which reply more heavily on external capital markets than large firms, are more sensitive towards the changes in financial markets (Rice and Strahan, 2010). The key research objective of the thesis, hence, is to empirically investigate the role played by financial development in SME finance.

1.2 Financial Development and SME Finance: An Overview

Financial development refers to the degree of which financial instruments, markets, and institutions alleviate the impacts of information and transactions costs by providing kinds of financial services to an economy. Financial systems perform five key functions in terms of providing information, monitoring investment, diversifying risks, mobilising savings and facilitating the exchange of services (Levine, 2005; Loayza et al., 2017). Accordingly, better developed financial markets and systems allocate capital more efficiently than less developed markets (Bena and Ondko, 2012). Ample evidence has shown that financial development is a key determinant of improving the availability of financial services (Beck et al., 2008; Bittencourt, 2012), efficiency of financial institutions (Hermes et al., 2009), international trade (Becker et al., 2012) and so on.

Due to insufficient observable signals of creditability, less formal and audited financial information and lower requirement and motivation to disclosure information, SMEs have very limited access to equity markets. Debt market, especially bank market, therefore, has become a critical source of external finance for SMEs (Beck and Demirguc-Kunt, 2006; Deloof et al., 2019). At the same time, the access to bank market is a major challenge for both SMEs and banks which serve SME customers due to the

problems of information asymmetries, adverse selection and moral hazard (Chua et al., 2011).

Existing studies have attempted to investigate how financial development contributes to SME finance in terms of availability, price, financial services and products. For example, empirical studies on banking market development have shown that improved banking market competition is able to increase credit supply and improve SME's access to bank finance, in both developed markets, such as U.S (Rice and Strahan, 2010) and emerging economies, such as China (Chong et al., 2013). In addition, banks develop the technology of lending decision to reduce the adverse effects of information asymmetries when lending SMEs by, such as relationship lending and credit scoring system, thereby reducing risk assessment costs (Berger et al., 2011) and the cost of bank finance for SMEs. Meanwhile, it has also been widely accepted that non-bank financial institutions also positively react to financial development by providing a wider range of financial products and services to SMEs, such as factoring, leasing etc. (Jaworski et al., 2014; Ozer, 2016).

The access to finance by SMEs is not only affected by financial market and system, but also influenced by institutional framework in which firms operate, such as law and regulations. Existing studies have shown that an effective institutional framework contributes to facilitate the information transmission in an economy between lenders and borrower, thereby mitigating asymmetric information problem (e.g. Casson,1997). SMEs with information opacity would benefit more from a well-functioning institutional framework. Although there have been both theoretical and empirical evidences focusing on the role played by financial development and institutional framework in the financing activities of SMEs, the evidence is never

conclusive. Therefore, this thesis is also aimed to investigate the moderating effects of institutional framework on the impacts of financial development on SME finance.

1.3 Thesis Development and Key Findings

The thesis is developed by introducing the research background first and reviewing relevant literature in both a general perspective and emerging markets in particular. This is mainly because nearly all sample firms are from emerging economies in the database. Specifically, Chapter 2 critically reviews both theoretical and empirical literature relevant to financial development and SME finance from a more general perspective. In addition, it also pays particular attention to the studies which has considered the roles played by institutional framework in the relationship between financial development and SME finance.

Based on existing literature and descriptive statistics of the sample used in the thesis, Chapter 3 focuses on financial development and SMEs in emerging economies in particular and aims to provide empirical evidence on the unique characteristics of SMEs in emerging economies in terms of size distribution, contribution to economic growth, their financing patterns and the importance of financial development in financing SMEs. The descriptive statistics presented in Chapter 3 are derived from World Bank Enterprise Survey (WBES) which covers sample SMEs from more than 134 emerging economics. This chapter shows that first, both institutional framework and economic features differ significantly between emerging and developed economies where in emerging economies, formal institutional norms are relatively weak compared with those in developed economies and hence, SMEs rely more heavily on informal institutions. Second, the differences in institutional framework are reflected in the operating obstacles faced by

SMEs and their financing patterns in different emerging economies. Third, financial development plays an important role in reducing financing constraint SMEs face in emerging economies.

To achieve the key research objective in terms of researching on the impacts of financial development and moderating effects of institutional framework on SME finance, Chapter 4 provides a thorough investigation on the selection of different sources of finance in financing both short-term and long-term projects by SMEs by fully using a cross-country data from World Bank. The results demonstrate the important roles played by financial development and legal system in the country where SMEs operate. Specifically, with better developed financial systems, SMEs are more likely to use formal sources of external finance from both bank and non-bank institutions than from informal sources of capital e.g. private finance, to finance their short term (e.g. working capital) and long term (e.g. fixed assets investment) demand for finance, highlighting the important roles played by financial development. In addition, this chapter provides evidence on the moderating effects of legal systems on the favourable impacts of financial development on SME finance. In particular, the effects of financial development on the access to external finance for SMEs are stronger in those countries with a stronger investor protection, such as those common law countries, than in those civil law countries. Finally, this chapter shows that the use of finance from non-bank institutions by SMEs is more sensitive to the degree of financial development.

Growing literature on SME finance has shown that, on the one hand, easy access to finance is a crucial factor of achieving SMEs' survival and growth; on the other hand, investment in account receivables (i.e. supply of trade credits to customers) as a business strategy has been concerned by SMEs. Empirical studies have provided clear evidence on both demand and supply of trade credit by SMEs, suggesting that firms with more

liquidity would face lower opportunity cost of financing and thereby are in a better position to supply credit to their customers who are financially constrained in accessing external finance (Fisman and Love, 2003; Garcia-Appendini and Montoriol-Garriga, 2013). Even though, as noted by Marotta (2005), small and financially constrained firms also provide trade credit to their customers. Following this route, Chapter 5 further investigates how financial development and institutional framework in the country where SMEs operate, would affect the supply of trade credits by SMEs to their customers.

In Chapter 5, the primary results support the crucial role played by financial development in affecting the redistribution of credit via trade credit in SME financing markets. SMEs in those countries with a higher level of financial development provide more trade credit to their customers and vice versa. In addition, I also consider the legal system in which SMEs operate because supply of trade credit to their customers is related, not only to the financial capacity of the suppliers themselves, but also to their ability to recover debt from customers. This chapter shows that SMEs in common law countries have a greater propensity to provide trade credit than those in civil law countries, consistent with existing studies that firms operating in countries with stronger creditor rights apply a more flexible liquidity management strategy (Lei et al., 2018). In order to maintain a valuable long-term relationship, trade credit suppliers pay close attention to their customers' survival; hence support customers that face temporary financial constraints (Cunat, 2007). The results presented in this chapter also show that the degree of financial development plays a much more important role in improving the supply of trade credit during financial crisis than after financial crisis period, further confirming the role played by financial development in the country where SMEs operate even with exogenous economic shocks. This chapter also shows that such beneficial effects of financial development are stronger if trade credit suppliers operate in domestic product

markets than those in international markets, suggesting that the development of informal credit (trade credit) is complementary to development of formal financial institutions at country level. Finally, Chapter 6 concludes and summarises the whole research.

1.4 Contribution and Thesis Structure

This thesis contributes to the research areas in both financial development and SME finance. In particular, it deepens our understanding of the significant role played by financial development on SME finance in terms of both demand (seeking finance) and supply (trade credit) of finance. Differ from existing literature in relevant research areas, this thesis contributes to knowledge in three important ways. Firstly, this study provides cross-country evidence on the favourable effects of financial development on SME finance, covering 134 countries most of majority of which are developing countries. It shows clear evidence that both demand and supply of SME finance vary over both economic features and institutional frameworks in the country where SMEs operate, thereby make implications for policy makers to improve the institutional environment. Secondly, this research provides additional empirical evidence to existing knowledge by supporting the important and significant role played by financial development and legal system in determining the sources of both long term and short term external finance by SMEs. In addition, the results shed light on the increasingly important role played by non-bank institutions in supplying external finance to SMEs in those countries with a higher degree of financial development. Thirdly, this study is proposed to add knowledge by investigating the role played by financial development in affecting the redistribution of credit via trade credit supplied by SMEs. It provides evidence to prove the role played by SMEs as agents for financial institutions in capital markets. Lastly, from a theoretical

perspective, this study provides supporting evidence on the role played by legal system in moderating the effects of financial development on the access to external finance by SMEs. It shows that strong creditor rights improve loan availability where in countries with better legal protection during bankruptcy and reorganisation, lenders are more likely to provide credit on favourable terms ex ante. Overall, this study relates to the literature on the effects of financial development on SMEs finance from both borrower's perspective (e.g. Beck and Demirguc-Kunt, 2006; Rahaman, 2011; Rostamkalaei and Freel, 2016) and liquidity provider's perspective (e.g. Fisman and Love, 2003; Garcia-Appendini and Montoriol-Garriga, 2013; Carbo‐Valverde et al., 2016).

The remainder thesis is structured as follows. Chapter 2 critically reviews both theoretical and empirical literature relevant to financial development and SME finance from a more general perspective. Chapter 3 provides literature review and some background statistics on financial development and SME finance especially in emerging economies. Chapter 4 investigates the relationship between financial development and SMEs accessing to external sources of finance for both short term and long term projects by considering the moderating effects of institutional framework. Chapter 5 examines how financial development affects the supply of trade credit by SMEs to their customers. Finally, Chapter 6 concludes by summarising the whole study and offering implications.

Chapter 2 Financial Development, Institutional Framework and SME Finance: Theoretical and Empirical Evidence

Both Chapters 2 and 3 review relevant literature on financial development and SME finance, in addition to the literature review sections in each of the following empirical chapters, i.e. Chapters 4 and 5. Next chapter, as a stand-alone chapter, provides literature review and some background statistics on financial development and SME finance especially in emerging economies. This is because in the following empirical analysis, 98.5% of the countries in my sample are emerging economies with only very small number of developed countries, such as Switzerland and Sweden. This chapter, in particular, critically reviews both theoretical and empirical literature relevant to financial development and SME finance from a more general perspective. In addition, it also pays particular attention to the studies which have considered the roles played by institutional framework in the relationship between financial development and SME finance.

Access to finance plays a crucial role in SME's survival and growth. Ample empirical evidence has shown that SMEs are more vulnerable to financing constraints than large firms in accessing to external finance (Beck and Demirguc-Kunt, 2006; Beck et al., 2008). Existing studies focusing on financing patterns around the world have highlighted the impacts of institutional differences across countries on capital structure (Demirgüç-Kunt and Maksimovic, 1999; Beck et al., 2008; Fan et al., 2012). Recent theories on economic development have also shed light upon the importance of financial development in promoting entrepreneurship, firm innovation, and economic growth (Ayyagari et al., 2012; Becker et al., 2012) by improving the allocation of resources and

investment opportunities (Bekaert et al., 2005). For example, there have been ample theoretical and empirical studies focusing on the role played by financial development in financing activities; the evidence, however, is never conclusive.

2.1 SME Finance

2.1.1 Theoretical framework on SME financing decision making

The problem of asymmetric information is a crucial determinant to understanding the financial behaviour of SMEs and how investors make lending decisions (Han and Zhang, 2012), where both adverse selection and moral hazard problems may exist. Information asymmetries exist where small business owner managers are supposed to know more about their businesses and investment projects than external stakeholders, such as lenders. In a perfect world without taxes, bankruptcy costs, agency costs, and asymmetric information, however, firm value is independent upon the financing decisions according to Modigliani and Miller (1958).

In the following development in understanding the roles played by information asymmetries in financing SMEs, the pecking order theory, developed by Myers (1984) and Myers and Majluf (1984), deepens our knowledge on how businesses make financing decisions in terms of the priority of sources of external finance and proposes that that 1) firms prefer internal to external finance to avoid issue costs; and 2) if external financing is necessary, following a hierarchical order of financing preferences from low-risk to high-risk, it is better for issuing debt finance than equity security. As demonstrated by models by Myers and Majluf (1984), a pecking order exists because when managers issue new equity, outside investors regard as a signal that firm is overvalued; hence, the stock

price will fall. Existing studies have provided empirical evidence which support the pecking order theory (Fama and French, 2002; De Jong et al., 2011). For example, based on data from US sample firms between 1985 and 2005, De Jong et al. (2011) confirm the power of pecking order theory in explaining corporate financing decisions.

Asymmetric information is a crucial determinant of addressing pecking order theory in capital structure and it has been accepted that pecking order theory has a greater power to expound capital structure decisions of small business than Modigliani-Miller Theorem and Trade-off theory (López-Gracia and Sogorb-Mira, 2008). Recent literature focusing on small business finance has shown empirical evidence supporting the pecking order theory in small business decision makings. For instance, Sánchez-Vidal and Martín-Ugedo (2005) using data of 1,566 Spanish firms over 1994-2000, propose that SMEs financing decision is consistent with prediction of pecking order theory. Aktas et al. (2011), which analysed 56,605 French micro firms between 1998 and 2006, find that these firms prefer to use internal source and use debts as s complementary source of funding, supporting pecking order theory.

There are several reasons to explain why the pecking order theory is predominant in understanding SME financing decisions based on asymmetric information. Firstly, compared with large firms, SMEs are disadvantaged in accessing external finance due to the unique characteristics of small business, such as less diversification (Ang, 1991), higher bankruptcy risk (Morck et al., 2000) and information opacity (Beck and Demirguc-Kunt, 2006), and thereby results in higher costs of capital for small firm borrowers (Liu et al., 2011), disproportionately higher monitoring costs for lenders (Aktas et al., 2011; Berger and Udell, 1998) and greater level of moral hazard and adverse selection problems (Berndt and Gupta, 2009). Meanwhile, empirical evidence has shown that the pecking order preference is more pronounced with a higher degree of information

asymmetries and the difference in cost of capital varies with financing sources (Cassar and Holmes, 2003). Secondly, it has been widely accepted that SMEs rely heavily on internal sources, such as personal wealth of business owners and retained earnings and are limited to access to equity market (Daskalakis et al., 2013), thereby debt finance, especially bank finance, is the primary sources of external financing for small firms (Robb and Robinson, 2014). As noted by Carpentier et al. (2012), the existence of information asymmetries and high costs for both SME and external equity investors, cause SMEs to face stronger financial constraints in accessing equity market, supporting the pecking order theory.

Based on the existence of information asymmetries, overall, existing literature has shown the variation of sources of finance and its impacts on SME financing decisions and costs of capital. However, there lacks evidence on the selection between the sources of finance from either formal (bank vs. non-bank institutions) or informal sources. Chapter 4 is thus aimed to provide a comprehensive investigation on the selection of different sources of finance in financing both short-term and long-term projects by SMEs by considering the roles played by financial development and institutional framework, such as legal system in the countries where SMEs operate.

2.1.2 The overview of SME finance

Numerous literature focusing on the development of SME has shown that SMEs make significant contributions to an economy, but also are likely to be financially constrained than large firms (Beck and Demirguc-Kunt, 2006; Daskalakis et al., 2013). Empirical evidence has also acknowledged that easy access to finance and low costs of capital are crucial determinants of achieving business survival, development and success (Arellano

et al., 2012). Financially constrained SMEs in accessing capital market are characterised by less capability of providing collateralisable assets, higher risk of bankruptcy, a greater degree of information asymmetries and higher transaction and monitoring costs (Rostamkalaei and Freel, 2016). Consequently, SME are more likely to use internal source, face credit rationing in accessing debt market and are limited to access equity market.

Unlike large firms, SMEs lack of credit history (Rostamkalaei and Freel, 2016), less formal and audited financial information and lower requirement and motivation to disclosure information (Wang et al., 2019), thereby causing information opacity. Asymmetric information is a key to the obstacle SMEs facing in accessing to finance. As indicated by Han and Zhang (2012), there are four reasons to explain why lenders face more serious problems of asymmetric information when lending SMEs than large firms: 1) the fixed costs to collect private information for small firms are relatively higher than large transactions; 2) small firm borrowers may have a smaller number of repeated transactions; 3) the institutional framework for commercialising private information collection by third parties is believed to be weaker in most of countries; and 4) the available measures are limited to indicate the signal of SME' creditability. The outcome of asymmetric information problem is that financiers either credit ration borrowers (Stiglitz and Weiss, 1981; Vos et al., 2007): a situation that some borrowers are rejected or receive the lower amount of credit than they need, or provide a menu of contracts to their customers (Bester, 1985): a situation that financial institutions distinguish the good-quality or bad-quality borrowers by offering different contract terms, such as different interest rates and amounts of collateralisation.

As indicated by prior study (Berger and Udell, 1998; Vos et al., 2007), internal sources of funding is typically the first option for SMEs, especially for start-up businesses.

The availability of internal funds, however, are likely to be limiting factors which hinder the growth of SME (Beck and Demirguc-Kunt, 2006). With the existence of external financing constraints, firms rely more on internal sources to support growth; however, there is a decreasing impact of internal financing on firm growth when the external financing constraints are alleviated (Rahaman, 2011). In other words, external sources of finance as a complement to internal sources, play a significant role in supporting SME' growing process and SMEs use more external sources to fund development when internal sources of finance become limited (Rostamkalaei and Freel, 2016).

Due to insufficient disclosure of information, lack of observable signals of creditability and the high costs of entry, SMEs are limited in accessing to equity market. Bank finance then has becomes a critical source of external finance for SMEs (Beck and Demirguc-Kunt, 2006; Behr et al., 2013; Deloof et al., 2019). Meanwhile, the access to bank market is a major challenge for both SMEs and banks which serve SME customers because of the asymmetric information problem, which causes adverse selection and moral hazard problems (Chua et al., 2011). Literature focusing on the relation between bank and SME sector has suggested the lending tools which can be used to mitigate the influence of adverse selection and moral hazard problems on capital market frictions, such as the use of both hard information (collateral requirement) and soft information (relationship banking), and contract design (Chakravarty and Scott, 1999; Berger et al., 2011; Zhang, 2015). With development of technology of lending decision, banks improve their lending decision efficiencies and SMEs have gained better access to banking market (Frame et al., 2001; Berger et al., 2011). Meanwhile, one solution to mitigate the financing constraints faced by SMEs is to encourage small and medium-sized banks to provide service to local clients (Dong and Chao, 2014) and to build long-term relationships with local SMEs to obtain worthy information about these local clients.

Such information acquired from relationship lending is important for banks to make lending decision and to offer price based on the information. Empirical studies have shown that developing a banking relationship is an efficient way to alleviate such an asymmetric information problem (Chakravarty and Scott, 1999), to reduce the default risk of bank loans (Hernández-Cánovas and Martínez-Solano, 2010), to improve the availability of external finance to SMEs (Petersen and Rajan, 1995) and to reduce the costs of finance (Berger et al., 2001). In addition, with financial market development, there is a wider range of financial products and services, such as leasing, factoring, venture capital, and other non-bank financial institutions, which have been widely used to support SMEs development (Beck and Demirguc-Kunt, 2006; Bruton et al., 2008; Dai et al., 2012; Jaworski et al., 2014).

Growing literature on SME finance has shown that trade credit, in addition to bank finance, is an important source of finance for SMEs, especially for financially constrained firms (Bastos and Pindado, 2013; McGuinness et al., 2018; Lawrenz and Oberndorfer, 2018) where trade credit is provided by businesses themselves to other business customers. Ample literature has discussed the relation between bank finance and trade credit in SME finance, which can be summarised as either *substitution* hypothesis (Schwartz, 1974; Garcia-Appendini and Montoriol-Garriga, 2013): holding the view that firms use more trade credit when they face financing constraints in accessing bank finance, or *complementary* hypothesis (Kling et al., 2014; Kohler et al., 2000): holding the view that banks prefer to lend if firms obtain credit from their suppliers; hence, more trade credits lead to more bank credits. Meanwhile, SMEs not only receive trade credit as one of financing sources, but also supply trade credit to their customers as liquidity provider. Existing studies have provided empirical evidence on both demand and supply of trade credits by SMEs, suggesting, for example, firms with more liquidity face lower

opportunity cost of financing and thereby are in a better position to supply credit to their customers who are financially constrained in capital market (Garcia-Appendini and Montoriol-Garriga, 2013). Following this route, Chapter 5 further investigates how financial development and institutional framework, such as legal system in the country where SMEs operate, would affect the supply of trade credits by SMEs to their customers.

2.2 Financial Development

2.2.1 The economic role of financial development

Since Schumpeter (1912), there has been ample theoretical literature focusing on the relationship between finance and economic growth, establishing the critical role played by financial institutions in improving economic activities. For decades, Both the earlier works (Gurley and Shaw, 1955; Goldsmith, 1969; McKinnon, 1973) and recent studies (Beck et al., 2008; Becker et al., 2012; Lei et al., 2018) have confirmed the theoretical conjecture that financial development is positively associated with economic growth. For example, the first recent cross-country empirical study by King and Levine (1993) use a cross-country data covering 80 countries between 1960 and 1989, define financial development to be related with credit market development, and provide supporting evidence on the favourable effects of financial development on economic growth. As concluded by Levine (2005), financial development refers to the degree to which financial instruments, markets, and institutions alleviate the impacts of information and transactions costs by providing kinds of financial services to an economy. It has also been widely accepted that financial systems perform five key functions: providing information,

monitoring investment, diversifying risks, mobilizing savings and facilitating the exchange of services (Merton, 1992; Levine, 2005; Loayza et al., 2017).

Existing literature, e.g. Loayze et al (2017), has challenged the causal issue of the relationship between financial development and economic growth. To evaluate the causality issue, Levine et al. (2000) using a panel dataset of 74 countries cover 1960 - 1995, provide strongly empirical evidence to support the view that financial intermediary development contributes to economic growth and such a finding is not subject to the potential biases such as omitted variables, simultaneity or reverse causation. Besides, literature has shown that the mechanism through which financial development promotes economic growth is the favourable effect of financial development on total factor productivity (Beck et al., 2000; Benhabib and Spiegel, 2000). Bekaert et al. (2005), for example, indicate that financial liberalisation, as one of the mechanisms, leads to long-term economic growth by stimulating financial deepening. Following this view, the following two chapters further investigate the effects of financial development in SME finance, especially on the use of external finance (Chapter 4) and supply of trade credits (Chapter 5).

2.2.2 The measure of financial development

As discussed above, financial development is a general concept and existing literature has attempted to characterise and measure it by more concrete indicators. The typical indicators of financial development used in cross-country study are developed by King and Levine (1993). They construct three indicators to measure the level of financial development in a particular country. The first indictor is the size of financial intermediaries or financial depth which is positively associated with the provision of

financial services, e.g. the ratio of liquid liabilities of the financial system to GDP. Liquid liabilities are known as broad money or M3, including the circulation of money from both banks and nonbank financial institutions. But the problem is that it may not be closely associated with financial services such as risk management and information processing. The second indicator of financial development measures the degree of financial development of specific financial institutions, i.e. banks, by the ratio of banks credit to banks and central bank domestic assets. Although banks are more likely to diversify risk and produce information services, they are subject to government regulations in many countries and could not cover the complete financial market in which allocating credit. The last indicator is measured by domestic asset distribution, e.g. a ratio of credit to private enterprises to GDP. Even this indicator measures the ability of an economy to allocate credit to private sectors rather than government or state-owned companies, it does not accurately evaluate the level of financial services provided in a capital market.

In addition, Levine and Zervos (1998) have provided empirical evidence establishing the link between stock market development and economic growth and developed three specific indictors of stock market development, including 1) stock market size measures, e.g. the value of listed domestic shares on domestic exchanges to GDP ratio (*Capitalization*), 2) liquidity measures, e.g. the value of the trades of domestic shares on domestic exchanges to the value of listed domestic shares ratio (*Turnover*) and the value of the trades of domestic shares on domestic exchanges to GDP ratio (*Value Traded*) and 3) international integration measures, e.g. the international capital asset pricing model (*CAPM*) and international arbitrage pricing theory (*APT*). Recent studies have also attempted to measure other dimensions of financial development and evaluated the effects of financial development on economic growth, such as the value added of the financial sector (Philippon, 2010), the share of employment in the financial sector

(Cecchetti and Kharroubi, 2015), and the wages and wage premia in the financial industry (Philippon and Reshef, 2013).

2.3 Institutional Framework

2.3.1 Institutional framework

Institutional framework is referred as "the set of fundamental political, social and legal ground rules that establishes the basis for production, exchange and distribution" (Davis et al., 1971, p.6) and can be classified into formal and informal institutions. Formal institutions are a set of laws and regulations on business operating activities, such as accounting standards, information disclosure, and securities trading. Whereas, informal institutions are referred as the rules which business groups, families and governments follow to contact each other (Young et al., 2008) and to discipline their individual and organisational behaviour (North, 1991). Hence, a well-functioning institutional framework undertakes the responsibilities to discipline business organisational behaviour and management process (Bruton et al., 2008; Hendry, 2000) and to determine the actions businesses take (He et al., 2007). Additionally, an effective institutional framework is also expected to facilitate the information transmission in an economy or society amongst individuals and organisations so as to reduce asymmetric information(Casson, 1997).

The institutional framework in emerging markets is believed to be weaker in its disciplinary and enforcing roles than that in developed markets (Bloom and Van Reenen, 2010) and formal institutions in emerging economies are inefficient (Young et al., 2008). The ineffectiveness of institutional environment worsens the problem of asymmetric information and businesses in emerging markets are less protected without a fully

functioning legal system. Consequently, businesses have to allocate more resources in information acquisition (Tong et al., 2008) and face higher risk to do business with others (Meyer, 2001). To reduce relevant transaction costs, businesses in emerging markets have to rely on informal institutions which have been found to play an important role in corporate governance (Yeung, 2006). As a result, small businesses may face a dilemma between their willingness to transit into a more professional management style and the heavy reliance on informal institutional framework in emerging markets (Daily and Dalton, 1992; Young et al., 2008).

2.3.2 Institutional voids

It has been accepted that the nature of institutions influences business activity (e.g. Stephan et al., 2015; Carney et al., 2016) by producing more authentic information, gathering and distributing information and capital, and facilitating transactions (Khanna and Palepu, 2010). However, Khanna and Palepu (1997) investigate several specific conditions in which institutions were either not working efficiently and effectively nor were completely absent. These conditions, referred to as institutional voids, can describe any type of country, but are common in emerging economies (Khanna and Palepu, 2010). The understanding of institutional voids has thus helped to investigate the key characteristics of emerging markets and provided clearer lens in how they differed from developed markets.

Institutional voids exist in a number of institutional areas, such as political, legal and social systems, foreign investment and trade institutions, product, labour and capital markets (Khanna and Palepu, 2010; Chacar et al., 2010). When these institutions fail to build or perform the rules and operate poorly, they hinder the interaction between buyers

and sellers, enhancing the transaction costs of business activity and reducing the likelihood of efficient outcomes (Doh et al., 2017; Kingsley and Benjamin, 2017). More specifically, Khanna and Palepu (2010) summarise several characteristics of countries with institutional voids, including inefficient judicial systems, uncertain regulatory environments, or opaque market information. In addition, some countries have limited supporting institutions in capital markets, such as information analysts and advisors (Dhanaraj and Khanna, 2011). Existing literature on institutional voids has acknowledged that specific institutions provide specific information, and that, in particular, capital markets improve market functions by relying on specific kinds of information intermediaries (Khanna and Palepu, 2010). A well-functioning institution framework alleviates uncertainty by producing and exchanging information for decision-making (Makhija and Stewart, 2002), while a poorly functioning institution framework or institutional void, fails to provide information, enhancing uncertainty and hindering investment (Khanna and Palepu, 1997; Kim and Song, 2017).

2.4 Chapter Summary

This chapter provides a review on relevant literature on SME finance and the economic effect of financial development. It also indicates the characteristic of institutional framework and its impacts on SMEs. Overall, it is widely accepted that the access to finance is a key factor of SMEs' survival and growth. Due to the unique characteristics of SMEs, they are more likely to rely on debt financing and have limited access to external finance. Policy makers have attempted to alleviate the financial obstacles SMEs face by developing more developed financial markets and lenders innovate the technology of lending decision and diversify financial service and products for SME

customers. The literature has investigated the role played by financial development in supporting economic growth. Meanwhile, the favourable effect of financial development on SME finance are believed to be able to reduce information and transaction costs. However, there lacks a comprehensive investigation on the direct effects of financial development on SME financing activity, in terms of both seeking finance from external sources and supplying finance (e.g. trade credit) to customers. Accordingly, this research is going to delve on the issue by paying a closer attention to the exploration of the effect of financial development on SME finance.

Chapter 3 Emerging Economies and Financing of SMEs

3.1 Introduction

It has been widely accepted that Small and Medium-Sized Enterprises (SMEs) make significant contributions to economic growth, creation of employment and innovation (e.g. Storey and Greene, 2010), in both developed and emerging economies. The social-economic environment in emerging economies in which SMEs operate differs significantly from that in developed economies in terms of institutional framework (Hussai et al., 2012), norms, resources and infrastructures (Hitt et al, 2000). Hence, SMEs in emerging economies possess unique characteristics in various ways such as the obstacles they face and access to finance. For example, in Asia-Pacific countries, SMEs have poor access to bank credit, 11.6% of GDP and 18.7% to total bank lending, given the established bank-centred financial system in such countries (Asian Development Bank [ADB], 2014). Indeed, the access to and the costs of finance for SMEs have been recognised as one of the most important determinants of small business start-up, survival and success (Mach and Wolken, 2012).

The aim of this chapter is to document the important roles played by SMEs in emerging economies, their unique characteristics and how financial development in emerging economies influences SME finance, in terms of financing patterns, financial constraints and corporate innovation. The evidence provided in this chapter is mainly derived from existing literature and the information collected from World Bank

Enterprise Survey[1] (WBES). The remainder of this chapter is organised as follows. Section 3.2 provides background information on emerging economies and documents the key features of SMEs in emerging economies, especially the key obstacles which constrain the development and growth of SMEs. It also reviews relevant literature on the important roles played by SMEs in emerging economies. Section 3.3 focuses on SMEs finance in emerging countries in terms of the key financing patterns, financial market development and the importance of financing SMEs in emerging economies. Section 3.4 concludes and provides implications for policy makers and future research.

3.2 Emerging Economies and SMEs

It has been widely accepted that SMEs make a significant contribution to the socio-economic and political infrastructure in both developed and developing countries, especially in the nations in transition from planned to market-oriented economies (Hussain et al., 2012). By reviewing existing literature and analysing data from World Bank Enterprise Survey (WBES), this section documents the key characteristics of the emerging economies, SMEs, the contributions they make and the constraints they face in emerging economies.

[1] WBES collects information from both SMEs and large firms between 2002 and 2015 in both emerging and developed countries on firm level characteristics, financing patterns, informality, corruption, crime, gender, infrastructure, performance, trade, workface, regulations and taxes, and innovation and technology.

3.2.1 Emerging economies and institutional framework

3.2.1.1 Emerging economies

Emerging economies are those "low-income, rapid-growth countries using economic liberalization as their primary engine of growth" (Hoskisson et al., 2000, p.249). The terms of emerging economies and transition economies are frequently mentioned but seldom defined in the literature. World Bank (2002) reports transition economies as a subset of emerging economies, are previously socialist countries in East Asia, Central and Eastern Europe, and the newly independent states of the former Soviet Union. Emerging economies not only include transition economies but also include in Latin America, the Middle East, Southeast Asia, and Africa (Peng, 2003). Thorpe and Prakash-Mani (2003) suggest that all developing countries should be categorised as emerging economies. Different scholars and institutions use diverse terms to define and classify emerging economies in their special topics. According to existing literature, there are mainly six criteria for dividing emerging economies into special categories, including 1) economic growth; 2) economic growth and systematic adjustment; 3) export growth rate in a designated time period; 4) financial market development and level of "opening up"; 5) the level and velocity of IT development; and 6) the political influence of developing countries (Boao Forum for Asia, 2011). The report published by Boao Forum for Asia (2011) shows that, in recent years, a new direction concerning emerging economies is that a small number of countries are combined into certain special groups, typical examples include "BRICs" (Brazil, Russia, India and China), "NEXT-11" (Bangladesh, Egypt, Indonesia, Iran, Korea, Mexico, Nigeria, Pakistan, the Philippines, Turkey and Vietnam), and "BASIC" (Brazil, South Africa, India and China).

Economically, emerging economies usually have higher GPD growth and lower GDP per capita, compared with developed economies. For example, over the last decade between 2006 and 2015 (Table 3-1), countries with low to middle income had an average GDP growth at 5.66% annually, higher than that of countries with high income (1.37%) and this is especially pronounced in East Asia and Pacific countries which has an average annual GDP growth rate at 8.48%. Table 3-1 also shows that high income countries have a much higher GDP per capita (US$40,000) than that of low-income countries ($532). Due to economic globalisation, the variation in export has become narrow between emerging (low to middle income countries) and developed (high income) economies, ranging from 20% (Latin and Caribbean countries) to 34% (Middle East and North African countries).

Table 3-1: 10-year average key macroeconomic variables (2006-2015)

Country	Exports (% GDP)	GDP growth (%)	GDP per capita (US$)
Low income	23.07	5.61	532.25
Low & middle income	28.31	5.58	3633.32
Lower middle income	27.66	5.89	1636.84
Middle income	28.38	5.57	3971.15
Upper middle income	28.62	5.49	6535.07
High income	30.37	1.37	39709.33
East Asia & Pacific (excluding high income)	31.97	8.48	4346.05
Europe & Central Asia (excluding high income)	31.81	3.11	7992.58
Latin America & Caribbean (excluding high income)	20.46	2.97	8193.20
Middle East & North Africa (excluding high income)	34.21	3.22	4009.18
Sub-Saharan Africa (excluding high income)	32.60	4.81	1475.99

Source: Data are from World Bank.

Many emerging markets are still in a transition stage and their market systems are imperfect (Dong and Men, 2014); hence, the access to external capital is more challenging in emerging markets for several reasons. First, firms operating in emerging markets face the imperfect institution factors, such as insufficient legal institutions

(Cunningham and Rowley, 2010). Second, financial disclosure in emerging markets is comparatively weak. Besides, in many emerging countries, businesses disclose financial reports based on their own financial standards and regulations, which are different from the international accounting standards, therefore, it results in additional work for auditing firms (Sami and Zhou, 2008). Third, it has been rather costly to collect private information by external parties; hence, the problems of asymmetry information and moral hazards are more server in emerging markets (Klonowski, 2006). Last, firms in emerging markets are more likely to have sever and difficult problem of corporate governance than that in developed markets (Black et al., 2010), such as unaccounted cash withdrawals and appointment of family members.

3.2.1.2 Institutional framework in emerging economies

Emerging economies differ significantly from developed economies in terms of institutional framework in which businesses operate. Institutional framework is referred as "the set of fundamental political, social and legal ground rules that establishes the basis for production, exchange and distribution" (Davis et al., 1971, p.6) and can be classified into formal and informal institutions. Formal institutions are a set of laws and regulations on business operating activities, such as accounting standards, information disclosure, and securities trading. Whereas, informal institutions are referred as the rules which business groups, families and governments follow to contact each other (Young et al., 2008) and to discipline their individual and organisational behaviour (North, 1991). Hence, a well-functioning institutional framework undertakes the responsibilities to discipline business organisational behaviour and management process (Bruton et al., 2008; Hendry, 2000) and to determine the actions businesses take (He et al., 2007).

Additionally, an effective institutional framework is also expected to facilitate the information transmission in an economy or society amongst individuals and organisations so as to alleviated the problem asymmetric information (Casson, 1997).

The institutional framework in emerging markets is believed to be weaker in its disciplinary and enforcing roles than that in developed markets (Bloom and Van Reenen, 2010) and formal institutions in emerging economies are inefficient (Young et al., 2008). The ineffectiveness of institutional environment worsens the problem of asymmetric information and businesses in emerging markets are less protected without a fully functioning legal system. Consequently, businesses have to allocate more resources in information acquisition (Tong et al., 2008) and face higher risk to do business with others (Meyer, 2001). To reduce relevant transaction costs, businesses in emerging markets have to rely on informal institutions which have been found to play an important role in corporate governance (Yeung, 2006). As a result, small businesses may face a dilemma between their willingness to transit into a more professional management style and the heavy reliance on informal institutional framework in emerging markets (Daily and Dalton, 1992; Young et al., 2008).

3.2.2 SMEs in emerging economies

Based on existing literature and data from WBES, this section summarises the key features of SMEs in emerging economies, with a comparison with large firms in the same markets and SMEs in developed economies when possible, in terms of (1) definition, (2) size distribution, (3) the contributions they make, and (4) the key obstacles they face and the markets they operate.

3.2.2.1 Defining SMEs

There has been a lack of universal definition on Small and Medium-sized Enterprises (SMEs), due to the big variation across countries and industries. Defining SMEs is usually based their sizes, in terms of number of employees and the value of capital and annual sales (see Table 3-2). Developed countries apply similar approaches where in the U.S, for example, SMEs are those firms with less than 500 employees and a maximum of 250 employees, €50 million turnover and €43 million assets is used as a benchmark in European Union. Table 3-2 presents the benchmarks employed in some example countries based on the number of employees, annual turnover and assets.

Table 3-2: Defining SMEs

Country	Number of Employees	Annual Turnover	Assets
USA	<500		
UK	<250	< £50 million	
European Union	<250	< €50 million	<= €43 million
Kenya	<100		
Australia	<200		
Turkey	<250	<= TL 25 million	<= TL 25 million
Fiji	<50	<= $500,000	
SMEs Criteria by Industry			
		Number of employees	**Turnover**
Malaysia	Manufacturing	UP to 200	Up to RM 50 million
	Services & Other Sectors	UP to 75	Up to RM 20 million
China	Manufacturing	Up to 1000	Up to CNY 400 million
	Retail	Up to 300	Up to CNY 200 million
	Transportation	Up to 1000	Up to CNY 300 million
	Construction	N/A	Up to CNY 800 million

Source: various sources (e.g. reports from individual countries)

3.2.2.2 Size distribution

A clear pattern observed in both developed and emerging economies is that SMEs far more outnumber large firms (Laukkanen et al., 2013). Table 3-3 shows firm size distributions in a variety of emerging economies covered by WBES. For example, In China, more than 70% of businesses are SMEs[2] and such a proportion ranges from 49% in Mexico to nearly 92% in Nigeria. Averagely, SMEs, with fewer than 100 employees, account for 84% of total businesses in emerging economies in 2013 and this is comparable with that (85%) in developed economies.

Table 3-3: Enterprise size distribution in emerging economies

	Size distribution (%)		
	Small	**Medium**	**Large**
China	36.70	35.19	28.11
India	33.62	43.75	22.64
Philippines	35.51	35.58	28.91
Indonesia	34.62	34.70	30.68
Turkey	49.93	30.06	20.01
Nigeria	63.49	27.65	8.41
Russian Federation	34.95	54.86	20.19
Mexico	24.46	23.72	51.82
Brazil	45.17	40.95	13.87
Argentina	35.01	35.96	29.03
Chile	30.79	36.30	32.91
Emerging economies in 2013	51.03	32.92	16.05
Developed economies in 2013	55.58	29.72	14.70

Source: Data are collected from World Bank Enterprise Survey (WBSES) and calculated by author.

3.2.2.3 The contributions made by SMEs in emerging economies

[2] There are several criteria to define firm size in different countries and some of the commonly used are the number of employees, total net assets, sales and investment level (Ayyagari et al., 2007). According to WBES definition, small firms are those with fewer than 20 employees, medium-sized enterprises are those with an employee number between 20 and 99 and larger firms have more than 100 employees.

As a fundamental part of a dynamic and healthy economy, SMEs make great contributions to job creation, innovation and economic growth, particularly in emerging economies (Hussain et al., 2012; Şener et al., 2014; Shen et al., 2009).

Ample empirical evidence has shown that SMEs have significantly contributed to employment creation, especially in those emerging economies with relatively low GDP per capita (Ayyagari et al., 2014). For example, small firms with fewer than 50 employees, employed 55% of total workforce in Tunisia between 1996 and 2010 (Rijkers et al., 2014) and in South Africa, SMEs, with fewer than 100 employees, contribute to 43% of total employment (Kerr et al., 2014). Existing empirical studies have also shown that net job creation is negatively associated with firm size (Lawless, 2014; Ayyagari et al., 2014) and firm age (e.g. Criscuolo et al., 2014) in both emerging and developed economies. Therefore, smaller and younger firms make greater contributions to job creation than large and more established businesses. As Table 3-4 shows, in those low-income countries, SMEs contribute to nearly 90% of new job creation and in South Asian countries, SMEs not only absorb the job loss in large firms but also create a large number of new positions.

Table 3-4: Job creation (%) as a share of total job creation by firm size

Regions	Small	Medium	Large
Median across income groups			
Low income	58.34	30.36	4.57
Lower-middle income	40.70	26.10	27.48
Upper-middle income	40.69	31.68	29.75
High income	39.84	58.79	6.31
Median across regions			
East Asia & Pacific	71.41	22.85	1.50
Eastern Europe & Central Asia	37.38	38.27	23.58
Latin America & Caribbean	45.79	30.15	35.69
South Asia	104.10	46.77	-50.87

Source: Ayyagari et al. (2014). This table presents the contribution to job creation over different firm size classes, where 5-19 employees (small), 20-99 employees (medium), and 100+ employees (large).

SMEs also play an important role in innovation activities which have been widely acknowledged as one of the key drivers of economic growth in emerging economies (Klonowski, 2012). In the traditional view of innovation, large firms have been identified as the main source of innovation activities, in terms of R&D investment (Galbarith, 2017; Chandler, 1990). Recent studies have shown that the R&D investment in SMEs in emerging economies has increased significantly and SMEs in Korea, for example, achieved an annual growth rate of 18.6% in R&D investment between 2005 and 2010 (Doh and Kim, 2014). Moreover, recent empirical evidence has shed new light on the contribution made by SMEs to innovation in terms of new product and process introductions, patents filed and innovations in markets or economic sectors and so on (Maula et al., 2006; Edwards et al., 2005; Lee et al., 2010). In addition, Table 3-5 shows that nearly 45% SMEs in the selected sample emerging countries have actively engaged with innovation activities. Compared with large firms, the advantage of small firms in innovation lies in their organisational flexibility which enables small firms to respond quickly to changing market demand and to communicate internally in a more efficient way (Mogee, 2003).

Table 3-5: New or significant improved product introduced in last 3 years

Country	**%**
China	44.62
India	41.73
Turkey	10.98
Philippines	32.77
Nigeria	48.60
Russian Federation	23.46
Mexico	47.08
Argentina	70.34
Chile	54.02
Kenya	68.55
Mean of Sample Countries	44.20

Source: Data are collected from World Bank Enterprise Survey and calculated by author.

SMEs, especially those entrepreneurial and smaller businesses, have also been identified as a key driving force for economic growth and an important contributor to GDP (Audretsch, 2007; Cravo et al., 2012). Entrepreneurial SMEs contribute to the social-economic development in both developed and emerging economies by establishing a strong link between the creation and commercialisation of knowledge (Cravo et al., 2012). For example, entrepreneurs set up new businesses by commercialising the split-over knowledge created within incumbent firms (Acs et al., 2009) and by human capital investment in terms of their understanding of new and advanced knowledge (Qian and Acs, 2013). Therefore, SMEs could achieve a greater productivity than large firms (Fernandes, 2008) and make a great contribution to GDP, such as 70% in Ghana, 57% in South Africa (Abor and Quartey, 2010), 50% in India and 30% in Bangladesh (Hussain et al., 2012).

3.2.2.4 The main constraints SME face

Due to the unique characteristics of the institutional framework and the dominance of SMEs in emerging economies, existing studies have attempted to investigate the obstacles SMEs face (e.g. Chowdhury et al., 2015; Dong and Men, 2014; Leon, 2015; Tacneng, 2014) so as to better understand the determination of SME growth. For example, WBES collects information on the key obstacles which constrain the development and growth of SME across countries and the degree of constraints ranges from 0 (no obstacle) to 4 (very severe obstacle). For comparison purposes, Table 3-6 shows the degree of constraint of each obstacle for both SMEs and large firms in both emerging and developed economies in 2009 and 2013 (in brackets) respectively. As shown, the most severe obstacle SMEs face in emerging economies in 2009 is corruption (mean=1.84)

and the least severe obstacle is labour regulation (mean=0.99), compared with tax rate (mean=1.77) and telecommunication (mean=1.16) for large companies in emerging economies. The variation highlights the importance of social-economic infrastructure in emerging economics, such as corruption, for SME growth.

In contrast, government regulation in developed economies is not identified as a severe constraining factor for SME growth and customs and trade regulation, for instance, is the least significant obstacle for SMEs with a mean value of 0.66. Compared with emerging economics, developed countries usually have a more effective taxation enforcement mechanism where SMEs find tax rate is the most severe obstacle for sustainable growth (mean = 2.37). In addition, Table 3-6 also shows that SMEs in emerging economies face more severe obstacles in competition, crime and disorder, corruption and access to finance than large firms. For example, in an empirical study on SME finance in Africa, Beck and Cull (2014) find that SMEs face more severe obstacles in their operation and growth than large firms and especially, they have very limited access to appropriate financial services. Such a pattern calls for government intervention in emerging countries to help SMEs overcome relevant obstacles.

For a comparison purpose, Table 3-6 also provides the mean value (in brackets) of each obstacle SMEs facing in emerging economies in 2013 and shows that overall, the operating environment for SMEs had improved between 2009 and 2013 in the selected sample countries, with an exception for political instability (1.69 in 2009 and 1.89 in 2013). The improvement is partially attributed to the development of the social-economic infrastructures in emerging economies and that of information technology and internet in developing countries (Paunov and Rollo, 2015). Internet has been found to have a favourable effect on labour productivity, helping SMEs improve their performance by

creating new trade opportunities to access new markets, and improving the coordination between production and delivery chains (Aker and Mbiti, 2010).

Table 3-6: Distribution of obstacles over firm size and markets in 2009 and 2013

Obstacles	Emerging Market		Developed Market	
	SMEs	Large	SMEs	Large
Electricity	1.74 [1.63***]	1.69*	1.56 [0.89***]	1.59
Telecommunications	1.08 [0.78***]	1.16	1.25 [0.74***]	1.34
Transport	1.29 [1.05***]	1.41***	1.13 [0.74***]	1.31
Customs and trade regulations	1.07 [0.92***]	1.30***	0.66 [0.55***]	0.86***
Practices of competitors in informal sector	1.64 [1.47***]	1.30***	1.48 [0.96***]	1.37
Access to land	1.22 [1.01***]	1.17*	0.98 [0.42***]	0.90
Crime, theft and disorder	1.50 [1.04***]	1.36***	1.32 [0.58***]	1.21*
Tax rates	1.82 [1.62***]	1.90***	2.37 [1.81***]	2.18***
Tax administration	1.51 [1.22***]	1.57**	1.57 [1.11***]	1.61
Business licensing and permits	1.12 [0.88***]	1.20***	1.12 [0.63***]	1.22
Political instability	1.69 [1.89***]	1.60***	1.82 [1.15***]	1.79
Corruption	1.84 [1.71***]	1.74***	1.46 [0.81***]	1.33*
Courts	1.15 [0.75***]	1.24***	1.23 [0.51***]	1.29
labour regulations	0.99 [0.78***]	1.18***	1.32 [0.86***]	1.51***
Inadequately educated workforce	1.50 [1.03***]	1.77***	1.50 [1.02***]	1.66**
Access to finance	1.72 [1.49***]	1.52***	1.38 [0.86***]	1.30

Source: Data are collected from World Bank Enterprise Survey (WBES) and calculated by author. The question asked is 'To what degree is an obstacle to the current operations of this establishment?'. Answers vary between 0 (no obstacle), 1 (minor obstacle), 2 (moderate obstacle), 3 (major obstacle), and 4 (very severe obstacle). It reports the mean values in 2009 first and those in 2013 in brackets; t tests on group mean differences and *, **, *** denotes that the mean value is different between groups with a statistical significance level at 10%, 5% and 1% respectively.

In addition, existing literature has also shown that SMEs are usually geographically constrained to localities in terms of access to finance (Han et al., 2017) and operation

(Kiveu and Ofafa, 2013). Therefore, the local market conditions are more important for SMEs than for large firms which have a better access to distant markets. Table 3-7 shows a consistent pattern on the main market for SME's main products in a group of emerging economies covered by WBES. On average, about 47% of the firms sell their main products locally, 48% nationally and only 5.02% internationally, ranging from 0.51% in Nigeria and 13.88% in Philippines. This pattern reflects the fact that SMEs in emerging economies have very limited access to international markets (Kiveu and Ofafa, 2013) and suggests a limitation of SMEs in emerging economies to enter international markets on one hand and the lack of managerial skill, limited information on foreign markets, limited resources to finance, inefficient transactions on the other (Organization for Economic Cooperation and Development [OECD], 2010).

Table 3-7: Main market for firm's main product (%)

Country	Local	National	International
China	23.00	69.62	7.38
India	31.45	62.93	5.62
Philippines	32.19	53.93	13.88
Indonesia	59.24	37.53	3.23
Turkey	54.23	34.92	10.85
Nigeria	75.63	23.86	0.51
Russian Federation	71.78	27.13	1.09
Mexico	55.89	43.59	0.52
Brazil	39.35	59.20	1.45
Argentina	32.18	60.36	7.46
Chile	42.99	53.83	3.18
Average	47.08	47.90	5.02

Source: Data are collected from World Bank Enterprise Survey and calculated by author.

In summary, this section provides background information on emerging economies and SMEs. It also documents SMEs in emerging economies in terms of their size distribution, operating obstacles and markets and the contribution they make in job creation, innovation and economic growth. It highlights the importance of SMEs in

emerging economies and calls for a government intervention to help SMEs overcome operating obstacles so that they could make a greater contribution to sustainable economic growth.

3.3 Financing SMEs in Emerging Economies

Empirical studies have acknowledged the importance of access to finance to SME success and growth (Arellano et al., 2012) and as Table 3-6 shows, SMEs in emerging economies face more severe obstacles in access to finance than large firms in the same markets and their counterparts in developed economies. Such a pattern is consistent with the empirical evidence that SMEs are more likely to be financially constrained and to be charged higher interest rates on loans, especially in emerging economies (Ardic et al., 2012; Singh and Janor, 2013; Dong and Men, 2014). Recent studies on SME finance have attempted to identify the cross-country financing patterns (e.g. Beck et al., 2011) and the effects of financial development on SME growth (e.g. Couppey-Soubeyran and Hericount, 2013). This section aims to document such patterns in SME finance, such as sources of finance, capital structure, financial constraints and how SMEs benefit from financial development in emerging economies.

3.3.1 Financing patterns and financial constraints of SMEs in emerging market

3.3.1.1 Financial development in emerging economies

Financial development is referred as "the factors, policies, and institutions that lead to effective financial intermediation and markets, as well as deep and broad access to capital

and financial services" (World Economic Forum [WEF], 2011, p. 3). Prior research has attempted to investigate the degree of development of banking markets, equity markets and bond markets and their effects on businesses. Banks and other financial institutions are the key suppliers of external finance for businesses and their development is usually captured by the ratios of liquid liabilities to GDP, currency outside banking system to base money, financial systems deposits to GDP, private credit by deposit money banks and other financial institutions to GDP. In addition to the size of banking markets, the degree of banking market development is also associated with efficiency (e.g. credit to deposit ratio, net interest margin and etc.), structure (competition vs. concentration) and profitability of banks.

The development of a banking market has been recognised as an important contributor to economic growth (Bencivenga and Smith, 1992), especially in emerging economies (Cole et al., 2008). This is because businesses have a greater dependence on bank finance in emerging economies than in developed economies where external finance could be also available from alternative sources, such as bond markets and other financial institutions. Non-bank financial intermediaries (NBFIs), i.e. those financial institutions not classified as commercial banks such as those leasing and factoring companies and contractual savings institutions, have also made a great contribution to financial development (Vittas, 1997) by providing additional sources of long-term finance to SMEs and by actively participating in financial transactions (Nassr and Wehinger, 2014). However, policy makers, in emerging economies in particular, need to enhance the monitoring of NBFIs to reduce the possible financial risks in economies.

Equity markets enable businesses to raise finance associated with ownership and are expected to be informationally efficient. Size (e.g. stock market capitalisation to GDP ratio) and liquidity (turnover ratio) of an equity market have been widely used as

indicators of the degree of development. Bond markets also play an important role for governments and businesses to raise either long term or short term external finance but are less used by smaller firms (Beck et al., 2010).

Recent research has also recognised the contribution of financial development to corporate innovation. For example, businesses, operating in countries with better-developed financial markets, are more likely to be engaged in R&D (e.g. Sharma, 2007). Corporate innovation activities have also shown heterogeneous sensitivities to financial development, depending on their reliance on different financial markets and degree of information asymmetries. Equity markets, for instance, provide both external finance to innovators and an efficient valuation and signalling mechanism for high-tech companies (Hsu et al., 2014). Overall, the development of equity markets has a favourable effect on access to finance, corporate innovation and economic growth (Narayan and Narayan, 2013).

A well-developed financial market would contribute to economic growth by offering an efficient operating platform for both information providers and users (Diamond, 1984), reducing illiquidity risks (Levine, 1997), optimising resource allocation, monitoring corporate control and improving liquidity of resources (Levine, 2005). The importance of financial development has been widely acknowledged in most emerging countries which have strategically reformed their financial systems to support economic growth (Niroomand et al., 2014). For example, the improved liquidity in Latin American financial markets has increased the supply of liquid credit to support businesses activities and to contribute to economic growth (Bittencourt, 2012).

SMEs rely more heavily on banking sector because of the high transaction costs to access equity and bond markets and their low information transparencies. However, it has been found that, compared with large firms, SMEs have poor access to bank finance

(Table 3-8) and averagely, the average SME loan amount in those Asia-Pacific countries, covered by Asian SME Finance Monitor, accounts to 11.6% of GDP and 18.7% of total bank lending (ADB, 2014). Table 3-8 also shows that banks have started to lend more to SMEs in those sample countries. For example, the loan amount issued to MSMEs in Indonesia increased more rapidly (20.2%) than the increase of total loan growth (12.6%) in 2014.

Table 3-8: Proportion of SME loans

	2011	**2012**	**2013**	**2014**
Indonesia				
MSME loans to GPD (%)	6.2	6.4	6.7	7.2
MSME loans to total loans (%)	20.8	19.4	18.5	19.7
MSME loan value growth (%)		14.9	15.7	20.2
Total loan growth (%)		23.1	21.6	12.6
India				
MSE loan value growth (%)	32.1	10.3	30.2	23.1
Medium-sized firm loan value growth (%)		19.1	18.4	3.8
Malaysia				
SME loans to GDP (%)	18.7	19.9	21.4	22.4
SME loans to total loans (%)	15	15.5	15.7	16.3
SME loan value growth (%)	17.1	13.5	12.7	13.3
Thailand				
SME loans to GDP (%)	31.2	32.1	35.4	36.6
SME loans to total loans (%)	33.7	32.3	34.1	34.5
SME loan value Growth (%)	18.83	8.38	11.38	5.32
Fiji				
MSME loans to total loans (%)	8	9.8	11.7	11.6
MSME loan value growth (%)	11	33.2	35.4	14.6
Solomon Islands				
SME loans to total loans (%)	40.6	28.1	21.9	23.3
SME loans growth (%)	38.1	-32.4	-13.7	18.9
China				
SME loans to GDP (%)	46.2	50.5		
MSE loans to GDP (%)		22.3	23.2	24.3
SME loans to total enterprise loans (%)	60.7	62.2		
MSE loans to total enterprise loans (%)		28.6	29.4	30.4
SME loans to total loans (%)	39.7	39.9		
MSE loans to total loans (%)			18.4	18.9

Source: ADB (2014). MSE = micro and small enterprise; MSME = micro, small, and medium-sized enterprise.

3.3.1.2 Sources of external finance

Because of the financial crisis, there has been a significant decline in the supply of both debt and equity finance to SMEs (Cowling et al., 2012) and retained earnings, therefore, have been used as the primary source of finance for SMEs, especially for short-term purposes (Dong and Men, 2014). The heavy reliance on internal sources of finance also reflects SMEs' limited access to external finance (Steinerowska-Streb and Steiner, 2014), which has been taken as one of the key obstacles for SME growth (Beck et al., 2006; Singh and Janor, 2013). Amongst external sources of finance, bank loan is the most widely used in both developed (e.g. Mach and Wolken, 2006) and emerging economies (Beck et al., 2011) because of the high costs to raise external finance from bond and equity markets (Mateev et al., 2013). In emerging economies, SMEs are found to have even more limited access to bank finance for investment and to be charged higher interest rates on their loans (Beck et al., 2011).

The problem of asymmetric information has been identified as an obstacle for SMEs to access external finance, where lenders have poorer information than SME owner managers on their future prospects (Han et al., 2009a). To overcome or alleviate such an asymmetric information problem, it is costly for lenders to acquire private information and to monitor SME borrowers and lenders usually require SME borrowers to secure their loans by pledging a collateral or a guarantee (Han et al., 2009b) which is not always available from SMEs (Steinerowska-Streb and Steiner, 2014). It has been accepted that a banking relationship could alleviate the asymmetric information problem and improve the availability of external finance for SMEs (e.g. Petersen and Rajan, 1995). Therefore, SMEs would have a better access to credit from relationship lending oriented banks, such as those small and domestic banks (Mian, 2006; Sengupta, 2007) than from transaction-

based banks, such as those large banks whose lending decisions are made on hard information collection (Berger and Udell, 2006). Recent empirical studies (e.g. De La Torre et al., 2010), however, have shown that large banks have changed and started to show a comparative advantage in financing SMEs in emerging economies by adopting new technologies, business models and risk management systems.

Due to the high costs in accessing equity and bond markets (Mateev et al., 2013), SMEs rely heavily on banking markets in raising external finance (Beck et al., 2011). Table 3-9 documents the use of credit lines by SMEs, compared with large firms, from a variety of financial institutions in a group of emerging markets. Banks (private or state-owned) are the main suppliers of credits to SMEs and averagely, 63% of SMEs use private bank credits and 31% use credits from state-owned banks or government agencies. Non-financial institutions and other financiers play a minor role in financing SMEs in such countries and such a difference reflects the information advantage for banks over non-bank institutions in screening and monitoring SME borrowers and the higher costs to collect private information from SMEs (Agarwal and Hauswald, 2010). Table 3-9 also suggests that the development of banking sector varies across emerging economies and in some countries (e.g. China and India) have dominating state-owned banks and government agencies in financing SMEs and in contrast, others (e.g. Mexico, Turkey and Philippines) have more developed private commercial banking sectors.

Table 3-9: Sources of credit lines for SMEs in emerging economies

Country	Private commercial banks		State-owned banks or government agency		Non-bank financial institutions		Others	
	SME	Large	SME	Large	SME	Large	SME	Large
China	16.98	14.66	74.80	82.74	7.16	2.60	1.06	0.00
India	11.28	19.92	86.04	78.59	2.01	1.49	0.67	0.00
Philippines	91.35	96.35	4.23	2.33	3.65	0.66	0.77	0.66
Indonesia	44.66	56.40	49.01	42.21	6.13	0.69	0.20	0.69
Turkey	78.77	86.34	19.29	10.31	1.60	2.58	0.34	0.77
Nigeria	63.33	78.38	8.89	10.81	20.56	5.41	7.22	5.41
Russian	69.46	67.86	26.66	29.34	2.55	1.80	1.33	1.00
Mexico	90.99	96.46	3.86	0.59	4.04	1.77	1.10	1.18
Brazil	59.32	71.43	40.68	28.57	0.00	0.00	0.00	0.00
Argentina	76.48	83.25	20.25	14.81	1.40	1.21	1.87	0.73
Chile	95.23	98.17	4.01	1.62	0.38	0.20	0.38	0.00
Average	63.44	69.93	30.70	27.45	4.50	1.67	1.36	0.95

Source: Data are collected from World Bank and calculated by author.

3.3.2 Capital structure and financial constraints

The financing patterns of SMEs, which prior literature has identified, are also observable from their capital structure decision makings and the financial constraints they face. For example, Smaller firms have lower leverage (Titman and Wessels, 1988; Rajan and Zingales, 1995) due to their limited access to external financing and credit markets (Forte et al., 2013), less diversification and higher bankruptcy risk (Jõeveer, 2013). In addition, compared with SMEs in developed markets, those in emerging economies are more likely to be financially constrained and to expose to interest rate volatility, and inflation and tax rate have a stronger impact on their capital structure decisions (Karadeniz et al., 2009).

As Table 3-6 shows above, SMEs in emerging economies face more severe obstacles in access to finance (1.72) than large firms (1.52) and SMEs in developed economies (1.38), where severity ranges from 0 (no obstacle) to 4 (very severe). SME's access to finance has improved over time in emerging economies (from 1.72 to 1.49) but

to a lower degree than the improvement in developed economies (from 1.38 to 0.86). Similar evidence is also available from Beck (2007), Rostamkalaei and Freel (2016) and Levenson and Willard (2000). Asymmetric information is central to understanding the financial constraints faced by SMEs (Han and Zhang, 2012) and the costs in acquiring private information from small business borrowers may lead to a credit rationing problem (Stigliz and Weiss, 1981) which is more pronounced amongst SMEs (Lizal and Svejnar, 2002) and in developing countries (Bond et al., 2015), compared with that amongst large firms in developed economies. Empirical studies have shown that developing a banking relationship is an efficient way to alleviate such an asymmetric information problem (Chakravarty and Scott, 1999), to reduce the default risk of bank loans (Hernández-Cánovas and Martínez-Solano, 2010), to improve the availability of external finance to SMEs (Petersen and Rajan, 1995) and to reduce the costs of finance (Berger et al., 2001). For example, Chakravarty and Scott (1999) indicate that relationship lending plays the significantly role in reducing the overall probability of credit-rationing and similarly, Hernández-Cánovas and Martínez-Solano (2010) suggest that the existence of trust between banks and firms improves SMEs' access to bank finance and reduces their borrowing cost. Information has been identified as a key issue in financing SMEs whose information is usually not transparent for lenders and such an asymmetric information problem limits the access to a wider range of lenders by SMEs (Berger et al., 2001). Hence, SMEs usually have very concentrated and exclusive banking relationships.

3.3.3 Financial development and financing SMEs in emerging economies

There has been ample empirical evidence showing that financing development is associated with long-term economic growth (Levine, 2005) and SMEs, which reply more

heavily on external credit markets, are more sensitive towards changes in financial markets (Rice and Strahan, 2010). Due to the weakness of institutional framework in emerging economies, it is expected that further development in financial markets would alleviate the financial constraints SME face so as to grow in a sustainable way. (Couppey-Soubeyran and Hericount, 2013). This section provides empirical evidence on the importance of financial development to economic growth and SME finance.

Financial development has been found to contribute to SME finance in terms of availability, price, financial service and products. The limited availability of external finance has been identified as one of the major constraints for SME growth (Beck and Demirguc-Kunt, 2006). Improved banking market competition, for example, has been found to be able to increase credit supply and improve SME's access to bank finance. Supporting evidence is available from both development markets, such as U.S (Rice and Strahan, 2010) and emerging economies, such as China (Chong et al., 2013) and Sub-Saharan African countries (Berg and Fuchs, 2013), and shows that with improved banking market competition, SMEs are more likely to use bank finance and their probabilities of being financial constrained reduce.

The entry of foreign banks has been found to contribute to banking market competition both directly as providers of financial services and indirectly by competing with domestic financial institutions (Levine, 1996) in emerging economies, such as Asian and Latin American countries (Jeon et al., 2011). The entry of more profitable foreign banks forces domestic banks to improve their operating efficiencies (Goldberg et al., 2000) and hence, improves the degree of competition in domestic banking markets.

Due to the problem of asymmetric information, banks may charge higher interest rates, require collateral and supply sub-optimal loan sizes to SMEs (Parker, 2002). The higher interest rates are also caused by the costs for banks to enforce contracts and to

collect private information, especially in emerging countries with weak institutional framework (Beck et al., 2011). With the development of technologies employed in lending decision makings, such as a credit scoring system, banks could effectively reduce risk assessment costs (Berger et al., 2011). Consequently, SMEs would have a better access (Feldman, 1997) and be charged at lower interest rates on bank finance (Frame et al., 2001).

With financial development, SMEs in emerging economies have had an access to a wider range of financial products and services, such as leasing, factoring, venture capital, and other financial instruments. Factoring, for example, has been widely used as an important source of working capital for SMEs (Ozer, 2016), especially those new firms in emerging economies with poor access to formal bank loans. Leasing has also developed into an important source of short and medium-term finance for SMEs (Kraemer-Eis and Lang, 2012) because of its advantages in availability, simply documentation, lower down payment and quick approval process (Hossain, 2013) in financing SMEs. Indeed, leasing contributes to the development of competitive financial systems (Berger and Udell, 2006) and financing new investment in emerging economies (Jaworski et al., 2014).

Venture capitalists (VCs) have played an increasingly important role in providing equity finance to SMEs, especially those high-tech and growth-oriented SMEs (Tan et al., 2013) in emerging economies (Bruton et al., 2008; Wruck, 2008). The main challenge venture capitalists face is the lack of strong financial and legal institutional framework to protect their interests (Scheela et al., 2015). Such a challenge is especially a big concern for foreign venture capitalists investing in emerging economies. To alleviate information asymmetries, foreign VCs tend to invest in more information-transparent ventures and to establish a partnership with local VCs (Dai et al., 2012).

As a summary on SME finance from non-bank institutions and complement to the information provided above on that of bank sector, Table 3-10 shows the development of non-bank institutions and their role in financing SMEs. First, the number of non-bank financial company has increased significantly in the past few years. For example, the number of non-bank institutions which provide finance to SMEs in Mongolia increased from 177 in 2009 to 378 in 2014 and the number of microfinance institutions in Lao also increased from 30 in 2010 to 67 in 2014. Second, the volume of SME finance from non-bank financial institutions also increases significantly in emerging economies, such as Tajikistan and China.

Table 3-10: SME finance from nonbank institutions

Country		2009	2010	2011	2012	2013	2014
Tajikistan	Growth of microfinance institution total loans (%)		10.2	43	30.6	40.4	
Indonesia	Leasing (% share)	32.6	28.5	31.2	34.8	33.7	30.3
	Factoring (% share)	1.4	1.2	1.6	1.7	2.2	2.6
	Credit card (% share)	0.7	0.5	0	0	0	0
	Consumer finance (% share)	65.3	69.8	67.2	64.5	64.1	67.1
Mongolia	Number of non-bank institutions	177	182	195	212	263	378
	Growth of total financing outstanding (%)	19.5	40.7	52.4	32.6	41.8	35.5
	Number of microfinance institutions		30	42	54	60	67
Lao	Growth of loans outstanding (%)			89.1	10.8	68.4	36.8
	Growth of loan accounts (%)			0.6	10.2	48.7	30.6
Fiji	Number of credit institutions	4	4	4	4	4	3
	Growth of SME financing outstanding (%)	-1.7	7.7	-10.9	13	8.2	
China	Growth of nationwide microcredit companies (%)	239.4	96	63.8	42	29	12.1
	Growth of loan outstanding (%)		155.5	98.2	51.2	38.3	
	Number of pawn enterprises		4,333	5,237	6,084	6,833	7,574
	Growth in number of financing leasing companies (%)		27	46.5	89.2	83.2	
	Growth of leasing contract balances (%)		32.9	66.7	35.5		
	Number of newly raised funds raised by venture capital		158	382	252	199	
	Investment amounts by venture capital companies ($ bil.)		5.4	13	7.3	6.6	
	Number of cases		817	1,505	1,071	1,148	

Sources: Asian Development XCV XCVXCV Bank (2014)

3.4 Conclusion and Implications

It has been widely accepted that SMEs in emerging economies make significant contributions to economic growth, job creation and innovation, and they show different features to their counterparts in developed markets and large firms in emerging economies. This chapter aims to provide evidence on the unique characteristics of SMEs in emerging economies in terms of obstacles they face, contributions to economic growth, their financing patterns and the importance of financial development in financing SMEs in emerging economies, by review existing literature and analysing the data collected by World Bank Enterprise Survey (WBES) which covers SMEs in more than 100 emerging countries. This chapter shows that first, both institutional framework and economic features differ significantly between emerging and developed economies where in emerging economies, SMEs rely more heavily on informal institutions and formal institutional norms are relatively weak compared with those in developed economies. Second, the difference of institutional framework is reflected in the operating obstacles faced by SMEs and their financing patterns in emerging economies. Third, financial development plays an important role in alleviating the financial problems for SMEs in emerging economies.

Due to the importance of SMEs in economic growth and their unique characteristics in emerging economies, policy makers have paid considerable attention to improving the operating environment in which SMEs operate. An important implication derived from earlier evidence is that policy makers should further improve the effectiveness of institutional framework by which SMEs could reduce the transaction costs in their operation. It would also help SMEs standardise their operating activities, such as accounting information disclosure and legal protection, in a more formal institutional

framework. Another implication for policy makers in emerging countries is to further develop their financial markets which could improve the availability and reduce the costs of external finance for financially constrained SMEs. This is especially important for less-developed countries where financially constrained SMEs may under-invest. This chapter also calls for banks to take further actions to provide SMEs more diversified financial products and services so that SMEs could make a greater contribution to economic growth.

Existing literature has shed light on the role played by banking markets on which SMEs rely more heavily than large firms. What is little known is how a specific financial institution could improve the availability and reduce the costs of external finance for a particular SME customer. This is probably because such 'one-to-one' information is rarely available publicly. Therefore, upon the availability of such data, future research could investigate how a SME selects a bank as its primary supplier of financial products and services and how such a match affects the decision makings of banks and SMEs in their future operation and relationship banking. In addition, existing literature has also identified the role played by information transparency on SME finance but how SMEs make accounting decisions is under studied. This is probably because many micro and small-sized firms are not regulated by governments in terms of accounting information disclosure. With the implementation of international accounting standards in emerging countries, it would be useful to fully understand how SME accounting information disclosure affects their financial decision making and corporate performance.

Chapter 4 Financial Development, Legal Systems and SME Finance: Cross-country Evidence

4.1 Introduction

It has been widely acknowledged that access to capital is crucial for small and medium-sized enterprises (SMEs) to attain a strategic advantage over competitors (Beck et al., 2013), but SMEs are more likely to be financially constrained than large firms (Beck and Demirguc-Kunt, 2006; Rostamkalaei and Freel, 2016) due to their information opacity, relative scarcity of collateralisable assets, and the disproportionately high monitoring costs for creditors (Berger and Udell, 1998).

Financial markets and systems are the key factors in promoting economic growth as they contribute to economic efficiencies by diverting financial funds from unproductive to productive uses (Durusu-Ciftci et al., 2017). For example, existing empirical studies have shown that better developed financial markets allocate capital more efficiently (Bena and Ondko, 2012) than less developed markets. According to Levine (1999), financial systems accomplish five functions to ameliorate information transaction frictions and contribute to economic growth. Firstly, financial market and systems contribute to resources allocation by producing information and to reducing transaction costs (Greenwood and Jovanovic, 1990; Wu et al., 2010). Secondly, financial systems allow investors to diversify risk, to enhance liquidity and thereby to reduce investment risk (Levine, 2005). Thirdly, financial development provides an exit mechanism for agents and improves the efficiency of financial institutions (Arestis et al., 2001). Fourthly, a well-developed financial market stimulates specialisation in

entrepreneurship and the utilisation of new technologies (Greenwood and Smith, 1997). Finally, financial market impacts economic growth by improving corporate governance (Demirgüç-Kunt and Levine, 1996) .

In addition, relevant literature on law, finance and economic growth has provided both theoretical and empirical evidence on the links the origin of a country's legal system to the country's financial and economic outcomes. For example, stronger investor protection stimulates more arbitrage (Morck et al., 2000) and more accurate financial reporting (Leuz et al., 2003) and thereby lead to stock prices that more accurately reflect fundamental values (McLean et al., 2012). Secondly, strong investor protection contributes to firms' access to external finance for value-enhancing projects (La Porta et al., 1998; 2000; 2002). Thirdly, business managers and controlling shareholders are more likely to invest in projects that benefit shareholders and less likely to misappropriate company's resources (Wurgler, 2000; Shleifer and Wolfenzon, 2002; Bekaert et al., 2011).

What is understudied in literature is how the financial and legal environment at country level would contribute to the access to external finance from bank and non-bank institutions by SMEs, in terms of both short-term and long-term finance from a cross-country perspective. To fill in such a research gap, this chapter is aimed to offer empirical and cross-country evidence on the determinant roles played by the degree of financial development and the origin of legal system in the country where SMEs operate.

In this chapter, I investigate the impacts of financial development and legal system on the access to external finance from bank and non-bank institutions by SMEs, in terms of both short term and long term finance. By collecting data from World Bank on SME finance from 134 countries between 2006 and 2016, I show primary results supporting the important roles played by financial development and legal system in the

country where SMEs operate. Specifically, I find that with a greater degree of financial development, SMEs are more likely to use formal sources of external finance (e.g. from both bank and non-bank institutions) than use informal sources (e.g. private) to finance their short term (e.g. working capital) and long term (e.g. fixed assets investment) demand for finance.

In addition, the use of finance from non-bank institutions by SMEs is more sensitive to financial development at country level. Economically, with one standard deviation increase in financial development, overall, SMEs would use more non-bank finance by 3.40% to finance fixed assets investment. Besides, compared with medium and large sized firms, small firm benefit more from financial market development. With one standard deviation increase in financial development, small firms are more likely to use more non-bank finance by 9.04% to finance fixed assets investment. This result suggests that non-bank financial institutions are more sensitive of the degree of financial development in providing finance to SMEs. Although non-bank financial institutions, such as microfinance institutions and credit unions, rely on relationship and reputation lending, they monitor and enforce repayment from a class of firms more efficiently than commercial banks (Arnott and Stiglitz, 1991). However, non-bank financial institutions would not substitute banks and serve the needs of higher end of the market as their monitoring and enforcement mechanisms are insufficiently developed (Ayyagari et al., 2010). With a lower level of financial development, financial system does not work well to accomplish the functions. In contrast, with financial market development, government and regulators should attempt to provide support to supervise and standardise non-bank financial institutions.

This chapter also provides novel evidence on the moderating effects of legal systems on the favourable impacts of financial development on SME finance. In

particular, it shows that the favourable effects of financial development on the access to external finance for SMEs are stronger for countries with a common law system than for those with a civil law system. The results are consistent with existing studies on law and finance, such as Qian and Strahan (2007), Graff (2008) and Haselmann et al. (2010).

The results are robust to various empirical specifications, such as alternative variable measurements. First, I construct two alternative proxies for financial development in addition to liquid liabilities to GDP used in the baseline analysis, such as the ratio of private credit to GDP and stock trade total value to GDP. Second, I group sample firms by firm size. Finally, I introduce one-year and two-year lagged value of liquid liabilities to GDP as alternative specification to evaluate the lagged effects of financial development on the access to finance by SMEs.

This chapter investigates the impacts of financial development and legal system on the access to external finance by SMEs, using a unique cross-country firm level database from World Bank. It contributes to existing literature in two major aspects. First, it offers novel cross-country evidence on the favourable roles played by financial development and investor protection and important implications for policy makers to improve the institution environment where SME operate. Second, for the first time, the paper articulates how financial development and legal system would make differential impacts on the lending behaviour of banks and non-bank institutions when financing SMEs with cross country evidence from 134 countries. Such a result highlights the important role of non-bank institutions in financing SMEs in different countries.

The chapter is structured as follows. Section 4.2 reviews relevant literature on financing of SMEs, and how financial development affects SMEs. Section 4.3 introduces the data and variables, descriptive statistics and empirical methodology employed. Section 4.4 presents the empirical results and those of additional tests. Finally, section

4.5 concludes by summarising the chapter and offering implications for relevant policymakers.

4.2 Literature Review

4.2.1 SME finance

The financing patterns of SMEs, which prior literature has identified, are observable from their capital structure decision makings and the financial constraints they face. For example, smaller firms have lower leverage (Titman and Wessels, 1988; Rajan and Zingales, 1995) due to their limited access to external finance and credit markets (Forte et al., 2013), less diversification and higher bankruptcy risk (Jõeveer, 2013). In addition, compared with SMEs in developed economies, those in emerging economies are more likely to be financially constrained and to expose to interest rate volatility, and inflation and tax rates have a stronger impact on their capital structure decisions (Karadeniz et al., 2009). This section reviews the existing literature on SME finance.

4.2.1.1 Short term and long term finance for SME

The decision by firms on the use of both short term and long term finance should be made with regards to the uses for which the funding is required. Generally, long term finance provides funding to the investment of non-current assets, such as fixed assets. Short term finance provides funding to the investment of current assets, such as working capital requirements.

Working capital refers to a firm's investment in current assets, such as cash, short-term securities, accounts receivable, and inventories (Soufani, 2012). Existing literature has shown that working capital decisions would affect firm performance (Kim and Chung, 1990), especially for SMEs (Baños-Caballero et al., 2010). De Almeida and Eid Jr (2014) indicate that management of working capital plays an important role in corporate profitability, risk, and company value. Working capital management involves a trade-off between risk and profitability (Tauringana and Adjapong Afrifa, 2013). Ek and Guerin (2011) argue that the tremendous latitude for improving the efficiency of working capital management exists in most companies. The efficiency of working capital management contributes to reducing the dependence on external sources, by using the released cash for future investments, and improving the company financial flexibility. Additionally, businesses can reduce the cost of finance by managing working capital more efficiently because they would rely less on external funds to finance the working capital requirements (De Almeida and Eid Jr, 2014).

In order to maximise company value, firms seek to keep an optimal level of working capital. Ample empirical evidence has shown that positive level of working capital may improve corporate performance. On the one hand, a higher level of investment in inventories can reduce supply costs, price fluctuations and prevent interruption in the production process. Meanwhile, it avoids the loss of business resulting from scarcity of product (Blinder and Maccini, 1991). Large inventories also support businesses to provide better service for customers and avoid high production costs due to the high fluctuations in production (Schiff and Lieber, 1974). On the other hand, as one of the most important parts of working capital, granting trade credit may increase firm's sales, as it serves as an effective way to reduce price (Petersen and Rajan, 1997), encouraging buyers to purchase at times of low demand (Emery, 1987), enhancing the

long-term relationship between suppliers and customers (Wilner, 2000), and reducing the asymmetric information between buyer and seller due to verify product and services quality prior to payment (Lee and Stowe, 1993). Additionally, trade credit works as important supplier selection criterion when it is hard to distinguish products (Deloof and Jegers, 1996). Emery (1984) demonstrates that trade credit, as short-term investment, would generate higher profitability than marketable securities. This issue would be addressed in the following chapter.

However, existing literature has also documented the adverse effects of overinvestment in working capital which might result in a negative impact on firm value with certain working capital levels. Firstly, relevant costs, such as warehouse rent, insurance and security expenses, tend to increase with the increasing level of inventory (Kim and Chung, 1990). Secondly, the increasing level of working capital would raise the demand for additional capital, where companies have to undertake more financing costs and opportunity costs (Baños-Caballero et al., 2014). In other words, a higher level of working capital leads to greater interest expenses and higher credit risk (Kieschnick et al., 2013). Meanwhile, firms holding more working capital may encounter a greater degree of financial constraints and face a greater risk of bankruptcy. This is because limited resources would be locked up in working capital when firms invest a high level of working capital (Deloof, 2003) which would not earn profits for business and consequently hinder the opportunity in other value-enhancing investment projects.

Kieschnick et al. (2009) use a sample of US firms from 1990 to 2004 and document that, first, on average, investing a dollar in working capital is worth less than holding a dollar cash. Second, an additional dollar invested in net operating working capital at current levels of such investment reduces firm value. Third, firms with better access to public capital markets, especially commercial paper markets, have a lower

reduction value from financing investment in working capital. Similar results are also available from Autukaite and Molay (2011) using sample of French firms between 2009 to 2009, and De Almeida and Eid Jr (2014) using a sample of Brazilian public companies from 1995 through 2009. As indicated by Fazzari and Petersen (1993), investment in working capital is more sensitive to financial constraints than investment in fixed assets. Meanwhile, investment in working capital depends on a firm's financing conditions (Baños-Caballero et al., 2014) and firms with better internal financing capacity and access to capital markets hold a higher level of working capital (Hill et al., 2010).

Long-term financing should be used for the purchase of non-current assets, such as land, building, machinery, equipment and other fixed assets (Davies et al., 2008). Fixed assets investments play a crucial role in maintaining corporate activities and improving the firm's productivity to supply goods and services. For example, Eriotis et al. (2002) show that fixed assets investment is strategically variable for firm's profitability.

Long term finance could be defined as a financial tool with maturity more than one year, such as bank loans, bonds, leasing and other forms of debt. Literature in the areas of finance and economic growth has shown that long term finance makes contribution to greater economy growth, common prosperity and abiding stability through two approaches. On the one hand, long term finance alleviates the rollover risks for borrowers, extends the boundary of investment, and enhances business performance. On the other hand, improving the availability of long term financial sources would allow companies to address their business-cycle challenges (Demirgüç-Kunt and Maksimovic, 1998; Demirgüç-Kunt and Maksimovic, 1999; Caprio and Demirgüç-Kunt, 1999; De la Torre et al., 2011).

However, long term source of finance for SMEs is scarce. Firms, especially those uncreditworthy borrowers, would obtain much less credit than they need or at higher interest rates than they are afford to. Caprio and Demirgüç-Kunt (1999) propose three factors to understand the limited availability of long term finance for businesses: (1) macroeconomic factors limiting the supply of long term finance by financial institutions, (2) institutional factors based on market imperfections, and (3) the characteristics of the company. Demirgüç-Kunt et al. (2017) also indicate that firms face financing obstacles would like limited access to long term finance due to market failures and policy weaknesses, such as weak information infrastructures, poor contract enforcement and weak investor protection.

4.2.1.2 Sources of external finance

There has been a significant decline in the supply of both debt and equity finance to SMEs since financial crisis (Cowling et al., 2012) and retained earnings have been more widely used as the primary source of finance for SMEs, especially for short-term purposes (Dong and Men, 2014). The heavy reliance on internal sources of finance also reflects SMEs' limited access to external finance (Steinerowska-Streb and Steiner, 2014), which has been taken as one of the key obstacles for SME growth (Beck et al., 2006; Singh and Janor, 2013). Amongst external sources of finance, bank loan is the most widely used in both developed (Mach and Wolken, 2006) and emerging economies (Beck et al., 2011) because of the high costs to raise external finance from bond and equity markets (Mateev et al., 2013). In emerging economies, SMEs are found to have even more limited access to bank finance for investment and to be charged higher interest rates on their loans (Beck et al., 2011).

The problem of asymmetric information has also been identified as an obstacle for SMEs to access external finance, where lenders have poorer information than SME owner managers on their future prospects (Han et al., 2009a). To overcome or alleviate such an asymmetric information problem, it is costly for lenders to acquire private information and to monitor SME borrowers, and lenders usually require SME borrowers to secure their loans by pledging a collateral or a guarantee (Han et al., 2009b) which is not always available from SMEs (Steinerowska-Streb and Steiner, 2014). It has been accepted that a banking relationship could alleviate the asymmetric information problem and improve the availability of external finance for SMEs (Petersen and Rajan, 1995; Weston and Strahan, 1996). Therefore, SMEs would have a better access to credit from relationship lending oriented banks, such as those small and domestic banks (Mian, 2006; Sengupta, 2007) than from transaction-based banks, such as those large banks whose lending decisions are made on hard information collection (Berger and Udell, 2006). Recent empirical studies (De la Torre et al., 2010; Beck et al., 2011), however, have shown that large and foreign banks have transformed and started to show a comparative advantage in financing SMEs in both developed and emerging economies by adopting new lending technologies (e.g., asset-based lending, leasing, factoring, fixed-asset lending, etc.), business models and risk management systems instead of relationship lending.

More recently, new financing alternatives have expanded rapidly and been promoted as conducive to moderating financing constraints of SMEs (Bruton et al., 2015). Non-bank institutions, including microfinance institutions, credit cooperatives, and finance companies, attempt to fill the gap between money-lenders who charge high interest rates and commercial banks who are unwilling to provide finance to people in poverty. For example, microfinance banks provide uncollateralised financial services or

are far more flexible than most commercial banks on the kinds of collateral required to secure loans (Cull et al., 2014), especially for small sized clients.

According to Hermes et al. (2011), commercial banks have become interested in serving microfinance, as it is a profitable business as having been proved by the operations of microfinance institutions. Furthermore, a number of microfinance institutions have begun to develop ranges of services to match the growing financial needs of small businesses, targeting larger firms and more affluent borrowers. This has increased the competition between banks and non-bank financial institutions. Vanroose and D'Espallier (2013) suggest that in countries with well-developed financial systems, two sectors, bank and non-bank financial institutions, stand in more direct competition with each other.

4.2.2 Financial development and legal system

4.2.2.1 The overview of financial development

Levine (1999) indicates that the cost of acquiring information and making transactions create incentives for the occurrence of financial markets and intermediaries. Different types and combinations of information and transaction costs stimulate distinct financial markets and institutions across countries and over time.

According to The Financial Development 2012 published by the World Economic Forum, financial development is referred as "the factors, policies, and institutions that lead to effective financial intermediation and markets, as well as deep and broad access to capital and financial services" (WEF, 2012, p.3). In a similar viewpoint, Levine (2005) summarises that "financial development occurs when financial instruments, markets, and

intermediaries ameliorate – though do not necessarily eliminate – the effects of information, enforcement, and transactions coats and therefore do a correspondingly better job at providing the five financial functions" (p.869-870). It has been widely acknowledged that financial system provides five financial functions, including (i) producing information on investments and allocating resources; (ii) monitoring investments and implementing corporate governance after providing finance; (iii) improving the trading, diversification, and management of risk; (iv) mobilising and pooling savings; and (v) easing the exchange of goods and services.

4.2.2.2 The importance of financial development

As above mentioned, financial systems play five financial functions and there are large variations, however, in terms of how well financial systems perform these functions. In this section, I review relevant literature on how financial systems impact economic development by performing financial functions.

First, financial development could produce information and thereby affect capital allocation. The fixed cost to evaluate firms and projects before making investment decisions is large, and individual investors have limited ability to collect, process, and produce information on possible investment projects. As noted by Boyd and Prescott (1986), financial intermediaries may reduce the cost of collecting and processing information and thereby improve resource allocation. Greenwood and Jovanovic (1990) demonstrate that assuming entrepreneurs solicit capital and the capital is scarce, financial intermediaries may produce better information on firms and thereby fund more promising firms and induce a more efficient allocation of capital. Financial intermediaries not only identify the best production technologies but also facilitate the rate of technological

innovation by identifying those firms with the best opportunities of successfully initiating innovative activities (Galetovic, 1996; Morales, 2003; Acemoglu et al., 2006). Consequently, financial intermediaries improve resource allocation by producing information and reducing transaction costs.

Besides identifying the best production technologies by financial intermediaries, stock markets also play a key role in stimulating the production of information about firms. More specifically, with bigger and more liquid stock markets, agents would have greater motives to exert resources into researching firms because it is easier to profit from this information by trading in large and liquid markets (Grossman and Hart, 1980). Hence, bigger and more liquid stock markets stimulate the production of valuable information and thereby contribute to capital allocation (Merton, 1987).

Second, traditional finance theories have placed emphasis on cross-sectional diversification of risk. Financial systems allow investors to diversify the risk in investment activities (Levine, 2005). Indeed, financial institutions, such as banks, bank-like institutions, mutual funds, and guarantors, provide financial services for trading, identifying and diversifying risk. The services of diversifying risk provided by financial system can influence long-run economic growth by altering resource allocation and savings rates (Patrick, 1966; Greenwood and Jovanovic, 1990; Saint-Paul, 1992; Obstfeld, 1992). For example, it has been widely acknowledged that engaging in innovation is risky and diversification promotes innovation activities (King and Levine, 1993b) and therefore, the ability to invest a diversified portfolio in innovation projects reduces investor's exposure to risk and stimulate resources flow into innovation activities, promoting technological development and economic growth.

Financial market and institutions also carry liquidity risk. As Levine (2005) summarises, liquidity risk occurs because of the uncertainty connected with converting

assets into an instrument of exchange. Due to informational asymmetries and transaction costs, market liquidity is hindered and liquidity risk happens. Existing literature focusing on liquidity and economic growth shows that, some high-return investment projects usually need a long-run capital input; however, savers are unwillingly if they are out of control of their savings in long periods. Therefore, if financial system does not increase the liquidity of long-term investment, the high-return projects will be under invested due to the lack of investment (Bencivenga et al., 1995). Levine (1991) develops an endogenous growth model in which stock markets arise to help agents manage liquidity and productivity risk and thereby contribute to growth. Stock market, therefore, mitigates liquidity risk by promoting trade where investors can readily sell their stocks in stock markets.

Third, financial system mobilises savings from individuals and allocates capital in a diversified portfolio of risky projects. There are two aspects associated with mobilising savings need to overcome, including (i) the transaction costs to collect savings from different individuals and (ii) the informational asymmetries associated with making savers feel comfortable in relinquishing control of their savings (Levine, 2005).

4.2.3 Why does the legal system matter?

Literature on law and finance has acknowledged the role of legal system in finance and economic growth that began with two widely cited papers by La Porta, Lopez-de Silanes, Shleifer and Vishny (La Porta et al., 1997;1998; henceforth LLSV). Levine (1999) researches financial development and economic growth, suggesting that a country's legal system and political institutions are certain factors to drive both financial and economic

development at critical moments. The difference of legal system may provide evidence to explain why access to capital by firms so differently in different countries.

La Porta et al. (1998) indicate that law and the quality of its enforcement are potentially key determinants of what rights security holders have and how these rights are protected. Law in each country is developed and shaped from a few legal families or traditions (Watson, 1993). Generally, commercial laws are typically from two broad traditions: common law, which is English in origin, and civil law, which was derived from Roman law (La Porta et al., 1998). Prior studies have acknowledged that civil law (common law) provides a weaker (stronger) legal protections for both shareholders and creditors (La Porta et al., 1998; Djankov et al., 2003; La Porta et al., 2000). Common law countries also seem to have better institutions, including less legal formalism thereby more efficient courts (Djankov et al., 2003), less corrupt governments (La Porta et al., 1999), and more informative accounting standards (La Porta et al., 1998).

Empirical studies on law and investment, have provided evidence to explain how investor protection affects microscopic investment activities. First, investor protection stimulates more arbitrage (Morck et al., 2000) and more accurate financial reporting (Leuz et al., 2003) and thereby leads to stock prices that more accurately reflect fundamental values (McLean et al., 2012). Second, strong investor protection contributes to firms' access to external finance for value-enhancing projects (La Porta et al., 1998; 2000; 2002). Third, business managers and controlling shareholders are more likely to invest in projects that benefit shareholders and less likely to misappropriate company's resources (Wurgler, 2000; Shleifer and Wolfenzon, 2002; Bekaert et al., 2011).

In addition, Qian and Strahan (2007) focus on legal and institutional variations which shape the ownership and terms of bank loans and suggest that in the countries with stronger investor protection, bank loans appear to be more of concentrated ownership,

longer maturities, and lower interest rates. They explain that lenders would have the ability to control credit risk as they know they will obtain assets due to the existing of strong investor protection law, in the event of default. In other words, stronger investor protection contributes to the increase of financial availability for firms with a lower cost and longer maturities. Besides, foreign banks are more sensitive to the legal and institutional environment than domestic banks.

In addition, bankruptcy law is pyramidally being accepted as essential institutions, especially for the credit markets and entrepreneurship (Ayotte and Yun, 2009). Empirical study has provided evidence showing that the judicial and bankruptcy inefficiency reduce access to credit, supporting that the efficiency of the bankruptcy system is important in determining the credit availability (Berger and Udell, 2006). Institutions of regulating insolvency commonly perform insufficiently, especially in developing countries (Djankov et al., 2008), and this happens because in these countries, bankruptcy procedures are usually hugely inefficient, e.g. taking much long time and costly, and the creditor protection is weak. Moreover, it has also been accepted that countries with greater legal procedural formalism, typically related to civil law countries, need longer to implement some types of financial contracts (Djankov et al., 2003).

Despite the studies of LLSV and others on the relation amongst legal origin, institutions, and financial outcomes, what is understudied in literature is about the relation between those and financing sources. Specifically, does the legal environment play a moderating role in the effects of financial development on SME finance? The aim of this chapter is to fill this gap in the literature by offering direct empirical and cross-country evidence on the determinant roles played by the degree of financial development and legal system in the country where SMEs operate.

4.3. Data and Methodology

4.3.1 Data collection

A big challenge to research on SMEs finance is the lack of reliable data to make cross-country comparisons, which is compounded by the lack of conformity in defining SMEs across countries. In this study, the empirical analysis uses data from two main sources. Firm-level data are collected from World Bank Enterprise Survey (WBES) and country-level data are collected from Would Development Indicator (WDI).

WBES is a firm-level survey of a representative sample of an economy's private sector. It provides detailed information on enterprises between 2002 and 2016 from both emerging and developed markets in the following perspectives: firm level characteristics, access to finance, informality, corruption, crime, gender, infrastructure, performance, trade, workface, regulations and taxes, and innovation and technology. In addition, WBES database has excellent coverage of firms of small and medium sizes, accounting for 80% of SMEs observations; whereas, other single country studies use data that focus heavily on large firms. There has been a lack of universal definition on SMEs because of the big variation across countries and industries. I follow WBES and define samples as being of small (5-19 employees), medium (20-99 employees) and large (100 + employees). Because countries are surveyed by WBES in every 3 to 4 years but not synchronously, in order to ensure the consistency of data, this research analyses the standardised dataset from 2006 to 2016, which contains 101,163 SMEs cross 134 countries. Furthermore, this chapter analyses SMEs financing decision between bank and non-bank institutions and hence the samples used in the following analysis exclude SMEs who never use bank or non-bank institutions as financing sources for working capital or

fixed assets investment. The total number of observations is 33,998. In the regression analysis, I match firms' financing patterns with other firm and country level characteristics.

The country-level data are collected from WDI and the number of observations in each country and the medians of key variables used to measure financial development are reported in Appendix 4-1. Generally speaking, India has the largest number of total firm-year observations accounting for 6.9% of total firm-year observations, followed by Niger (4.28%) and Russian Federation (4.28%); whilst Micronesia has the smallest number with 0.07%. The summary statistics point to a positive and strong relation between three indicators of financial development. For example, the median ratio of liquid liabilities to GDP in China is 170.94%; meanwhile, the ratio of domestic credit to private sector to GDP and the ratio of stock market total value trade to GDP are also much higher, 130% and 59.41%, respectively. In addition, the median of liquid liabilities to GDP, as the main proxy for financial development, differs dramatically amongst the sample counties, ranging from 226.37% in Lebanon, 170.94% in China, 119.65% in St. Kitts and Nevis, and 116.53% in Jordan, to values below 15% in Tajikistan, Angola, and Democratic Republic of the Congo. In addition, the sample countries are categorised according to their legal system into either common law (24% sample countries), civil law (53%) or other (24%) legal system.

4.3.2 Measuring financing sources

To investigate the access to external finance by SMEs, the main dependent variables are the percentage of external finance by firm *y* in country *k* in year *t*, referring to the sources from either bank or non-bank institutions, in terms of both short term (working capital) and long term (fixed assets investment) finance, respectively. In constructing dependent

variables, I use two survey questions, first, the percentage of this establishment's working capital borrowed from each of the following sources: 1) internal funds or retained earnings, 2) banks including private and state-owned, 3) non-bank financial institutions which include microfinance institutions, credit cooperative, credit unions, or finance companies, 4) purchases on credit from suppliers and advances from customers, and 5) other, moneylenders, friends, relatives, etc. The second question is the percentage of this establishment's total purchase of fixed assets that was financed from each of above sources. According to the survey question, banks are private and state-owned banks, and non-bank institutions include microfinance institutions, credit cooperative, credit unions and finance companies. Informal sources consist of trade credit and others, such as moneylenders, friends, relatives, etc. In total, there are four dependent variables in this chapter, including 1) the percentage of working capital financed by banks ($W.Cap._{B}$), 2) the percentage of working capital financed by non-bank institutions ($W.Cap._{NB}$), 3) the percentage of fixed assets investment financed by banks ($F.Ass._{B}$), and 4) the percentage of fixed assets investment financed by non-bank institutions ($F.Ass._{NB}$).

4.3.3 Measuring financial development

The key explanatory variable is the level of financial development. In last three decades, many scholars have developed several measures to investigate the degree of financial development based on the characteristics of financial institutions and markets. Beck et al. (2010) have summarised and suggested a selected number of financial system indicators that could be used in the empirical analysis, as shown in Table 4-1.

There are three points to explain how the indicators have been selected to measure the degree of financial development in this study. First, existing literature investigating

the impacts of financial development on the allocation of capital has widely used the size of the financial systems as a measure of financial development and such measures are usually liquid liabilities to GDP or private credit to GDP. For example, King and Levine (1993a) in their pioneering article on finance and growth use liquid liabilities to GDP as indicator of financial development, and provide cross-country evidence between financial development and economic growth. Second, this study aims to explain how financial development affects the access to external sources from both bank and non-bank institutions and hence, the indicators which only measure the banking system, such as net interest margin and deposit money banks assets to GDP, are not appropriate options in this study in order to avoid bias. Third, although SMEs have very limited access to equity market (Mateev et al., 2013), existing evidence has shown that stock market development takes place in tandem with other aspects of financial development (Demirgüç-Kunt and Maksimovic, 1996). Hence, in addition to the key indicator used in the main analysis, I also select an indicator of capital market development to measure financial development in robustness test.

Table 4-1: Different measurements of financial institutions and markets

	Measures
The size of the financial system	Liquid liabilities to GDP
	Currency outside banking system to base money
	Financial system deposits to GDP
	Private credit to GDP
	Stock market capitalization to GDP
	Private bond market capitalization to GDP
The banking system	Central bank assets to GDP
	Deposit money banks assets to GDP
	Other financial institutions assets to GDP
	Deposit money to central bank assets
	Net interest margin
	Cost-income ratio
	Concentration
Capital markets and the insurance sector	Stock market capitalization to GDP
	Stock market turnover ratio
	Stock market total value traded to GDP
	Number of listed companies per 10,000 people
	Private bond market capitalization to GDP
	Public bond market capitalization to GDP
Indicators of financial globalization	International debt to GDP
	International loans from non-resident banks to GDP
	Off-shore deposit to domestic deposits
	Remittance inflows to GDP

Source: Beck et al. (2010)

Following existing studies, such as King and Levine (1993b) and Hermes et al. (2009), the level of financial development in this study is primarily measured by *liquid liabilities to GDP*, the traditional indicator of financial development to measure financial depth. Liquid liabilities (measured as M3) include currency held outside the banking systems plus demand and interest-bearing liabilities of banks and nonbank financial intermediaries (King and Levine, 1993a). Liquid liabilities to GDP is the broadest available indicator of financial intermediation, including all banks and bank-like and nonbank financial institutions (Beck et al., 2010). A higher ratio of liquid liabilities to GDP means a higher intensity in the financial system and a greater degree of financial development. According to King and Levine (1993b), the assumption of this indicator is

that the size of financial sector is positively related to financial services. For instance, Hermes et al. (2009) suggest that there is a positive relationship between the efficiency of microfinance institutions and financial development, where financial development is measured by liquid liabilities to GDP.

In robustness tests, I employ alternative measures of financial development which serve as substitutes to liquid liabilities to GDP, such as *domestic credit to private sector to GDP* and *stock market total value trade to GDP*. Domestic credit to private sector to GDP, as a traditional indicator of financial development, is commonly used to measure the depth of country's financial sector (Love, 2003; Hassan et al., 2011; Li et al., 2018). Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available, e.g. finance and leasing companies, money lenders and insurance corporations. The high ratio of domestic credit to private sector to GDP means a high level of domestic investment and a high level of financial system development (Hassan et al., 2011). Love (2003) reports that financial institution relations with private sector are more indicative of the provision of efficient financial services than financial institution relations with the public sector; hence, a higher ratio of domestic credit to private sector to GDP indicates a greater degree of financial development.

As shown by Levine (1991), stock market impacts on the economic activity through the creation of liquidity. Hence, I use one indicator of stock market as an alternative measure of financial development, stock market total value trade to GDP, by following recent papers exploring financial development and the allocation of external finance, e.g. Bena and Ondko (2012). Stock market total value to GDP, which is defined in Levine (1997), equals total number of shares traded on the stock market exchange

divided by GDP. It indicates the trading volume of the stock market activity as share of national output and catches the liquidity of the stock market (Beck and Demirguc-Kunt, 2009).

4.3.4 Measuring legal system

Existing literature on law and finance has attempted to identify the legal factors which matter most for finance (La Porta et al., 1998; Djankov et al., 2008) and the legal origin is a universal variable to measure the legal environment. Some national legal systems are sufficiently similar in certain crucial aspects; thereby allow classification of national legal systems into major families of law. Two broad legal traditions to be relevant in matters of investor protection are common law and civil law. According to La Porta et al. (1998), the civil law family as the oldest, the most influential, and the most widely distributed around the world, includes three currently common families of laws - French, German, and Scandinavian, and the common law family consists of the law of England and those law modelled on English law. Literature has indicated that common law countries have stronger investor protection laws and a greater private enforcement than civil law countries (La Porta et al., 1998; 2006; Djankov et al., 2008).

One of objectives of this chapter is to investigate whether legal system moderates the effects of financial development on SMEs' access to external finance. By following La Porta et al. (1998), I use legal origin to measure legal environment. The sample countries are categorised according to their legal system into common law (24% sample countries), civil law (53%) and other (24%) legal system.

4.3.5 Control variables

Prior literature has also indicated that, how the access to external finance is affected by a variety of firm characteristics, such as *firm age* (Beck et al., 2013), *firm size* (Ayyagari et al., 2012), *ownership* (Beck et al., 2006), and *financing constraint* (Beck et al., 2008). It is acknowledged that younger and smaller firms are more likely to be financially constrained in accessing external finance (Rostamkalaei and Freel, 2016). Accordingly, all of the corresponding variables describing the above characteristics are considered in the baseline and subsequent analyses. Besides, following Beck et al. (2013) who study financial structure, size and access to finance, I also control for two dummy variables to gauge the access to and the use of financial services: *account* that equals to one if the establishment has a checking or saving account and zero otherwise, and *loan* that equals to one if the establishment has a line of credit or a loan from a financial institution and zero otherwise. Asymmetric information is central to understanding the financing behaviour, and informationally opaque small business borrowers are more likely to face credit rationing (Stiglitz and Weiss, 1981; Vos et al., 2007). Hence, I add a dummy variable to control for asymmetric information, *financial statement* that equals to one if annual financial statements checked and certified by an external auditor and zero otherwise, where the degree of information opacity can be mitigated by the checked and certified financial statements. Following Leon (2015), I also control for the top *manager's year of experience* and whether the sample firm is a *subsidiary*.

To avoid the omitted variable issue, following Demirgüç-Kunt and Maksimovic (1998), Beck et al. (2008) and Leon (2015), macroeconomic characteristics correlated with external finance availability are included as control variables, including GDP per capita and the rate of inflation. GDP per capital is a proxy for institutional determinant

of the access to external finance. According to Demirgüç-Kunt and Maksimovic (1998), the rate of inflation indicates a government's management of its economy and whether the local currency provides a stable measure of value to be used in long-term contracting. Hence, I consider the rate of inflation in each country over the sample period to control for the possibility that the level of inflation may influence on firm's ability to access long-term debt finance. Besides, I control for country-level governance by 'Worldwide Governance Indicators' which consist of six indicators, including control of corruption, government effectiveness, political stability and absence of violence, regulator quality, rule of law and vice and accountability. All indicators have a value ranging from -2.5 and +2.5 and by following Cole et al. (2013), I use the average value of six indicators to control for the governance at country level. In addition, I also control for year and industry fixed effects. The definitions of all variables used in detail are shown in Appendix 4-2.

4.3.6 Descriptive statistics

Table 4-2 reports the descriptive statistics of the variables used in this analysis. Panel A presents summaries of the variables used to measure the external finance for both short term working capital finance and long term fixed asset investment. Variables regarding the characteristics of the country and firm level have been reported and summarised in Panel B. Averagely, SME samples use 41.19% and 30.03% of working capital borrowed from banks and non-bank institutions, respectively. This percentage, however, varies significantly across countries. In addition, 69% of SMEs in the samples are facing financing constraint, and the variable of financial statements indicates that over 50% of samples are informationally opaque firms. Indicators to measure financial development

also have been reported in Panel B. In specific, liquid liabilities to GDP ranges from 0.05 to 2.26 with an average of 0.49 and a standard deviation of 0.31 respectively.

Table 4-3 provides the detail of sample selection. This study investigates SMEs which have borrowed from bank and non-bank institutions, but not those SMEs never using bank or non-bank finance. Hence, samples do not include observation without working capital and fixed asset investment borrowed from bank or non-bank institutions. Table 4-4 shows the correlation matrix of dependent and independent variables and in general, it suggests that there is little evidence on the multicollinearity problem because most correlation coefficients are not higher than 0.2.

Table 4-2: Descriptive statistics

This table reports the summary statistics of all variables used in the following empirical analysis, including those used in robustness tests. The sample collected is from 2006 to 2016 and 134 countries. Panel A reports the four dependent variables to measure choices of financing between bank and nonbank institutions, in terms of working capital finance and fixed asset investment, respectively. Panel B presents the variables that may affect firm's financing sources from both country-level and firm-level. Detailed variable definitions and sources are shown in Appendix 4-2.

Variable	Obs.	Mean	Std.dev.	Min	Max
Panel A: Dependent Variables					
W.Cap.$_{B}$	24,520	41.19	26.59	0.5	100
W.Cap.$_{N.B}$	3,789	30.03	23.52	1	100
F.Ass.$_{B}$	10,047	62.32	31.48	1	100
F.Ass.$_{N.B}$	1,343	49.50	33.80	1	100
Panel B: Independent Variables					
Firm level characteristics					
Loan	97,793	0.31	0.46	0	1
Account	98,023	0.85	0.36	0	1
Subsidiary	101,163	0.14	0.34	0	1
Age (log)	99,640	2.59	0.72	0	5.42
Foreign	101,163	0.07	0.26	0	1
Government	101,163	0.01	0.07	0	1
Exp (log)	98,289	2.55	0.78	0	7.6
Finance Constraint	97,077	0.69	0.46	0	1
Small size	101,163	0.58	0.49	0	1
Financial Statements	98,991	0.45	0.50	0	1
Country level characteristics					
FD$_{LL/GDP}$		0.49	0.31	0.05	2.26
FD$_{PC/GDP}$		0.42	0.30	0.02	1.60
FD$_{ST/GDP}$		16.04	18.59	0.002	86.08
GDP per capita (log)		8.01	1.10	5.04	10.98
Inflation (log)		1.64	0.89	-3.48	3.83
GovIndex		-0.41	0.63	-1.90	1.74

Table 4-3: Sample selection

	W.Cap.$_{B}$	*W.Cap.$_{NB}$*	*F.Ass.$_{B}$*	*F.Ass.$_{NB}$*
Total SMEs	101,163	101,163	101,163	101,163
Excluded				
Don't know	2,995	3,251	1,327	1,258
Refused to answer	131	142	1,947	1,972
Not applicable	4	4	24	554
Do not use (0)	64,392	85,538	29,345	33,950
Missing value	9,121	8,439	58,473	62,086
Sample size	24,520	3,789	10,047	1,343

4.3.7 Empirical method

In order to examine the determinant role played by financial development in SMEs' access to short-term and long-term finance from three major sources, banks, non-bank institutions and other informal sources. I establish the following baseline specifications:

$$Working\ capital\ financing_{\ i,j,t,s} = \partial + \beta_1\ Financial\ development_{j,t} + \beta_2\ Loan_{i,j,t} + \beta_3\ Account_{i,j,t} + \beta_4\ Subsidiary_{i,j,t} + \beta_5\ Firm\ Age_{i,j,t} + \beta_6\ Foreign_{i,j,t} + \beta_7\ Government_{i,j,t} + \beta_8\ Exp_{i,j,t} + \beta_9\ Finance\ Constraint_{i,j,t} + \beta_{10}\ Small_{i,j,t} + \beta_{11}\ Financial\ Statements_{i,j,t} + \beta_{12}\ GDP\ per\ capita_{j,t} + \beta_{13}\ Inflation_{j,t} + \beta_{14}\ GovIndex_{j,t} + Year_t + Industry_k + \varepsilon_{i,j} \quad \text{(Eq.4-1)}$$

$$Fixed\ assets\ investment\ financing_{\ i,j,t,s} = \partial + \beta_1\ Financial\ development_{j,t} + \beta_2\ Loan_{i,j,t} + \beta_3\ Account_{i,j,t} + \beta_4\ Subsidiary_{i,j,t} + \beta_5\ Firm\ Age_{i,j,t} + \beta_6\ Foreign_{i,j,t} + \beta_7\ Government_{i,j,t} + \beta_8\ Exp_{i,j,t} + \beta_9\ Finance\ Constraint_{i,j,t} + \beta_{10}\ Small_{i,j,t} + \beta_{11}\ Financial\ Statements_{i,j,t} + \beta_{12}\ GDP\ per\ capita_{j,t} + \beta_{13}\ Inflation_{j,t} + \beta_{14}\ GovIndex_{j,t} + Year_t + Industry_k + \varepsilon_{i,j} \quad \text{(Eq.4-2)}$$

where *i, j, t, s* and *k* index firm, country, year, sources and industry respectively. *Working capital financing* $_{i,j,t,s}$ is the dependent variable to measure the proportion of working capital referring to the sources *s* from either bank or non-bank institutions by firm *i* in country *j* in year *t*. Similarly, *Fixed assets investment financing* $_{i,j,t,s}$ is the dependent variable measuring the proportion of fixed assets investment referring to the sources *s* from either bank or nonbank institutions by firm *i* in country *y* in year *t*. *Financial development* $_{j,t}$ is country *j*'s degree of financial development in year *t*, measured by

liquid liabilities to GDP ($FD_{LL/GDP}$) in baseline estimations and by domestic credit to private sector to GDP ($FD_{PC/GDP}$) and stock market total value trade to GDP ($FD_{ST/GDP}$) in robustness tests. Control variables are the characteristics at both firm and country-level. $Year_t$ and $Industry_k$ capture year and industry fixed effects respectively to control for time and industry-specific trends. I followed existing literature, e.g. D'Souza et al. (2017) which used the same dataset, and controlled for heteroskedasticity-robust standard errors, after including a rich set of country-level variables.

Table 4-4: Correlation matrix of dependent and independent variables

	Variable	1	2	3	4	5	6	7	8	9	10
1	W.Cap.B	1									
2	W.Cap.NB	0.0072	1								
3	F.Ass.B	0.4568***	0.2546***	1							
4	F.Ass.NB	0.2588***	0.4466***	0.2040***	1						
5	Loan	0.0327***	-0.0200	0.1018***	0.1275***	1					
6	Account	0.0182***	-0.0214	0.0209**	0.0440	0.1524***	1				
7	Subsidiary	0.0073	-0.0325**	-0.0247**	-0.0032	0.0135***	0.0411***	1			
8	Age (log)	-0.0146**	-0.0700***	0.0094	0.0014	0.0997***	0.0569***	0.0353***	1		
9	Foreign	-0.0265***	0.002	0.0005	-0.0453	-0.0246***	0.0405***	0.1141***	-0.0486***	1	
10	Government	-0.0040	-0.0267	-0.0298***	-0.0866***	-0.0110***	0.0087***	0.0391***	0.0224***	0.0119***	1
11	Exp (log)	-0.0128**	-0.0064	0.0383***	0.1581***	0.1256***	0.0544***	0.0037	0.4629***	-0.0379***	-0.0158***
12	Finance Constraint	-0.0241***	-0.0182	-0.0439***	-0.0314	0.0805***	-0.0202***	-0.0295***	-0.0299***	-0.0320***	-0.0146***
13	Small size	-0.0060	0.0675***	0.0051	0.0287	-0.1708***	-0.1383***	-0.0875***	-0.1808***	-0.0743***	-0.0382***
14	Financial Statements	0.0866***	-0.0299*	0.0246**	0.0122	0.1243***	0.1783***	0.1438***	0.1124***	0.0993***	0.0247***
15	FDLL/GDP	0.1441***	0.0580***	0.0093	0.1798***	0.0764***	0.1084***	0.1129***	0.0755***	-0.0546***	0.0099***
16	FDPC/GDP	0.0486***	-0.0350**	0.0392***	0.1721***	0.1508***	0.1332***	0.0424***	0.0761***	-0.0511***	0.0106***
17	FDST/GDP	0.0906***	0.0531***	-0.0049	-0.0967***	-0.0181***	0.0845***	-0.0262***	0.0081**	-0.0763***	0.0139***
18	GDP per capita (log)	-0.0933***	-0.0899***	0.0248**	0.1164***	0.1728***	0.1071***	0.0267***	0.1119***	-0.0409***	0.0000
19	Inflation (log)	-0.0271***	0.0496***	0.0694***	-0.0064	-0.0493***	-0.0136***	0.0039	-0.0304***	-0.0047	0.0144***
20	GovIndex	0.0217***	0.0116	0.1042***	0.2414***	0.2352***	0.1484***	0.0086***	0.1600***	0.0202***	-0.0339***
		11	12	13	14	15	16	17	18	19	20
11	Exp (log)	1									
12	Finance Constraint	-0.0319***	1								
13	Small size	-0.0961***	0.0233***	1							
14	Financial Statements	0.0590***	-0.0240***	-0.2106***	1						
15	FDLL/GDP	0.0860***	-0.0857***	-0.1133***	0.1967***	1					
16	FDPC/GDP	0.0889***	-0.1287***	-0.1250***	0.1188***	0.6827***	1				
17	FDST/GDP	-0.0254***	-0.0933***	-0.0975***	0.0904***	0.3713***	0.5589***	1			
18	GDP per capita (log)	0.1774***	-0.1116***	-0.0670***	0.0102***	0.2523***	0.4442***	0.0550***	1		
19	Inflation (log)	-0.0156***	0.0327***	0.0147***	-0.0236***	-0.3329***	-0.2471***	-0.0764***	-0.0898***	1	
20	GovIndex	0.1626***	-0.0782***	-0.0673***	0.0966***	0.2402***	0.5018***	0.1287***	0.5777***	-0.2341***	1

Note: *** $p < 0.01$. ** $p < 0.05$. * $p < 0.0$

4.4. Empirical Results

4.4.1 Financial development and SME financing decision: baseline results

Table 4-5 presents the baseline OLS results for Eq.4-1 and Eq.4-2 to examine the role played by financial development in determining the access to external sources of both short term (working capital finance, *W.Cap*, Models 1 and 2) and long term finance (fixed asset investment, *F.Ass*, Models 3 and 4) by SMEs, where the dependent variables are the percentage of either short term or long term finance obtained from either bank or non-bank institutions, respectively. The regressions are run with OLS with heteroskedasticity-robust standard errors. Variance inflation factor (VIF) has been checked where the VIFs of $FD_{LL/GDP}$ are around 1.5 in Models 1 - 4. Given other variables, the VIFs are below 5, showing little evidence of multicollinearity problems. At the bottom of models, I report the results of testing the statistical significance for the differences in the coefficients for using finance from bank versus non-bank institutions, which is statistically significant at 1% level.

As reported in Table 4-5, the estimated coefficients of $FD_{LL/GDP}$ are positive and statistically significant in all regression specifications. In specific, the results show clear evidence that with a greater degree of financial development, SMEs are more likely to obtain formal sources of external finance (e.g. from both bank and non-bank institutions) than use informal finance (e.g. private) to finance the short term (e.g. working capital) and long term (e.g. fixed asset investment) demand. Because SMEs are more vulnerable to asymmetric information problems than large firms (Vermoesen et al., 2013), for financial institutions, the fixed costs of collecting private information from small firms are higher than from large firms (Han and Zhang, 2012). With financial development,

financial intermediaries may reduce the cost of collecting and processing information and thereby alleviate asymmetric information and improve resource allocation. This finding is consistent with Beck et al. (2011), who show banks in developing countries provide a lower share of investment loans and charge higher interest rates to SMEs than those in developed countries.

Table 4-5 also provides clear evidence that the access to external sources of long term finance from non-bank institutions by SMEs are more sensitive to the degree of financial development at country level than the use of finance from banks. To be more concrete, the estimated coefficient indicates an increase of $FD_{LL/GDP}$ by one standard deviation (0.31) would contribute to SMEs obtaining more non-bank finance by 2.15% on working capital (Model 2) and by 3.40% on fixed asset investment (Model 4), where the means (standard deviations) of using non-bank finance are 30.03% (23.52) and 49.50% (33.80%) for working capital and fixed assets finance, respectively. Focusing on access to bank finance, the marginal effects suggest that the proportion of working capital and fixed assets investment from banks increases by 2.21% and 1.90%, respectively, with $FD_{LL/GDP}$ increased by one standard deviation (0.31). From few papers focusing on competition between banks and non-banks, one seemingly contradictory result is Vanroose and D'Espallier (2013) who suggest that microfinance financial institutions (MFIs) display less outreach in countries with better developed formal banking systems; whereas Hermes et al. (2009) indicate that MFIs would operate more efficiently with better developed formal financial systems. The results in this study suggest that, with a greater degree of financial development, non-bank financial institutions are more likely to supply finance to their SMEs customers in accessing external finance of fixed assets investment. Overall, the evidence shows a favourable effect of financial development on the access to external finance by SMEs from both banks and non-bank institutions.

Table 4-5: Financial development and SME finance

This table reports OLS results on how financial development affects the access to external finance by SMEs. Models 1 and 2 show results of the effects of financial development on sources of working capital obtained from either bank or non-bank institutions. Models 3 and 4 report results of the effect of financial development on sources of fixed asset investment obtained from either bank or non-bank institutions. Specifically, the dependent variables measuring SMEs financing sources are the percentage of working capital financed by bank (*W.Cap.B*), the percentage of working capital investment financed by non-bank institutions (*W.Cap.NB*), the percentage of fixed asset investment by bank (*F.Ass.B*) and the percentage of fixed assets investment by non-bank financial institutions (*F.Ass.NB*). Financial development is measured by liquid liabilities to GDP ($FD_{LL/GDP}$). T test for differences in the coefficients for using finance from bank versus non-banks is at the bottom of models. The regressions are run with OLS with heteroskedasticity-robust standard errors. ***, ** and * denote statistically significant levels of 1%, 5% and 10% respectively.

	(1)	(2)	(3)	(4)
VARIABLES	*W.Cap.B*	*W.Cap.NB*	*F.Ass.B*	*F.Ass.NB*
$FD_{LL/GDP}$	7.1364***	6.9288***	6.1407***	10.9573**
	(0.7183)	(1.9900)	(1.2910)	(4.8816)
Loan	5.2435***	-2.0861**	7.4564***	1.2581
	(0.4384)	(0.9292)	(0.9057)	(2.2494)
Account	-1.0241	-2.7592**	-0.8439	-1.1406
	(0.7830)	(1.2451)	(1.5700)	(3.2365)
Subsidiary	-0.7392	-0.0867	-1.2129	3.0757
	(0.5258)	(1.2220)	(0.9853)	(2.5894)
Age (log)	-1.0209***	-1.2810*	-1.2991**	-2.7545*
	(0.2995)	(0.7117)	(0.5606)	(1.6616)
Foreign	-2.6804***	0.9364	-0.3247	-3.9711
	(0.8213)	(1.8065)	(1.4314)	(3.7470)
Government	-1.8822	-5.6599	-11.9660**	-25.6803**
	(2.9446)	(3.7190)	(5.4436)	(11.3240)
Exp (log)	0.6450**	0.1554	1.1996**	4.9902***
	(0.2854)	(0.6259)	(0.5210)	(1.6043)
Finance Constraint	-0.9857**	-0.7929	-3.4891***	-3.3032
	(0.4283)	(1.0807)	(0.7905)	(2.4145)
Small size	0.9746**	3.2946***	1.5825**	3.6168*
	(0.3859)	(0.8998)	(0.7234)	(2.0507)
Financial Statements	2.6321***	-1.0092	0.7988	-0.8716
	(0.4021)	(0.8984)	(0.7217)	(2.0307)
GDP per capita (log)	-2.1838***	-2.9193***	-1.1529**	0.2091
	(0.2776)	(0.5429)	(0.4983)	(1.2965)
Inflation (log)	1.5428***	1.7864**	2.0313***	0.5190
	(0.2991)	(0.6614)	(0.4095)	(1.4816)
GovIndex	4.1556***	2.8726***	4.8612***	3.4531
	(0.4632)	(1.0636)	(0.7908)	(2.5038)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Constant	50.3902***	50.9223***	50.3075***	29.2121*
	(3.1566)	(6.3376)	(5.9970)	(15.6984)
Observations	19,803	2,999	8,345	1,085
R-squared[3]	0.0679	0.0515	0.0540	0.1446
Adj R-squared	0.0668	0.0438	0.0513	0.1253
F-statistic	60.06***	6.72***	19.79***	7.47***
P-value	*0.000*		*0.000*	

[3] The R-squared are relatively low but at an acceptable level. For the research on small business finance, due to the large variation of the data in small business finance sector, the R-squares are lower than those of empirical studies on large firms. For example, to investigate the relation between financial structure and firms' access to financial services by the dataset of WBES, the R-squares of the models' testes by Beck et al. (2013) range from 0.033 to 0.043 in general.

4.4.1.1 Additional test for baseline results

Existing studies have indicated that national culture is a factor which influences the contracting environment (Zheng et al., 2012). Therefore, at country level, I also consider the national culture to measure country characteristic as control variables in Eq. 4-1 and Eq. 4-2. Following Hofstede (2001), I use uncertainty avoidance (UA) to measure national culture. As shown in Table 4-5-1, UA is significant in 3 baseline models, consisting with literature and the earlier baseline results still hold after adding the additional national culture control, UA.

However, due to the data limitation, in my thesis, UA is just available for 29 countries, where the total sample countries are 134; hence, the number of observations is decreased. More specifically, compared with the original observation in baseline results (Table 4-5), the new number of observations, where considering the UA as control variables (Table4-5-1), in each model reduces by 33% (*W.Cap.B*), 37% (*W.Cap.NB*), 35% (*F.Ass.B*) and 40% (F.Ass.NB), respectively. Consequently, I just consider national culture (UA) as control variable in the baseline models only to best use the available observations.

Table 4-5-1: Financial development and SME finance

This table reports OLS results on how financial development affects the access to external finance by SMEs. Models 1 and 2 show results of the effects of financial development on sources of working capital obtained from either bank or non-bank institutions. Models 3 and 4 report results of the effect of financial development on sources of fixed asset investment obtained from either bank or non-bank institutions. Specifically, the dependent variables measuring SMEs financing sources are the percentage of working capital financed by bank (*W.Cap.B*), the percentage of working capital investment financed by non-bank institutions (*W.Cap.NB*), the percentage of fixed asset investment by bank (*F.Ass.B*) and the percentage of fixed assets investment by non-bank financial institutions (*F.Ass.NB*). Financial development is measured by liquid liabilities to GDP ($FD_{LL/GDP}$). The regressions are run with OLS with heteroskedasticity-robust standard errors. ***, ** and * denote statistically significant levels of 1%, 5% and 10% respectively.

	(1)	(2)	(3)	(4)
VARIABLES	*W.Cap.B*	*W.Cap.NB*	*F.Ass.B*	*F.Ass.NB*
$FD_{LL/GDP}$	11.4642***	8.2023***	7.5383***	-0.4467
	(1.2105)	(2.8711)	(2.3793)	(6.8936)
Loan	5.1995***	-2.4459**	8.2409***	-0.3321
	(0.5489)	(1.1819)	(1.1295)	(2.9337)
Account	1.1823	0.7490	2.7859	3.2869
	(0.9516)	(1.4701)	(1.8889)	(3.7227)
Subsidiary	-0.5762	-0.0619	-0.9064	-5.0961
	(0.6576)	(1.5889)	(1.2244)	(3.4596)
Age(log)	-1.9317***	-1.0510	-2.0747***	-3.5297*
	(0.3678)	(0.8859)	(0.6965)	(2.0640)
Foreign	-2.4469**	1.2040	-0.3105	-1.9731
	(1.1971)	(2.6496)	(2.0090)	(5.4867)
Government	-7.8804**	-4.9839	-10.3819	-14.3934
	(3.7232)	(4.0233)	(6.3869)	(11.7610)
Exp (log)	-0.0204	0.1245	0.9075	3.6568*
	(0.3528)	(0.7847)	(0.6618)	(2.0297)
Finance Constraint	-1.8469***	-0.4817	-4.5087***	-2.6930
	(0.5220)	(1.3382)	(0.9665)	(3.0491)
Small size	1.3526***	3.7813***	2.0871**	2.4830
	(0.4766)	(1.1296)	(0.9045)	(2.6554)
Financial Statements	3.1814***	0.7149	1.3285	-1.3560
	(0.5209)	(1.1446)	(0.9258)	(2.6147)
GDP per capita (log)	-3.2289***	-4.3905***	-3.7215***	-6.6068***
	(0.4687)	(0.9528)	(0.8756)	(2.2288)
Inflation (log)	1.1838***	0.1402	1.7165**	-6.5631***
	(0.4562)	(1.0466)	(0.8505)	(2.2071)
GovIndex	4.5578***	2.7307**	5.2548***	5.5386*
	(0.6151)	(1.3463)	(1.0648)	(3.1908)
UA	0.1155***	0.1672***	0.0366	0.3617***
	(0.0200)	(0.0535)	(0.0369)	(0.1209)
Constant	46.8712***	59.2890***	83.6912***	109.3324***
	(5.0287)	(9.4864)	(9.1239)	(21.6727)
Observations	13,319	1,878	5,404	647
R-squared	0.0881	0.0584	0.0641	0.2198
Adj R-squared	0.0865	0.0462	0.0597	0.1897
F-statistic	53.55***	4.79***	14.73***	7.30***

4.4.2 Robustness checks

4.4.2.1 Alternative sampling

The literature has verified a positive effect of financial development on the allocation of external finance (Beck et al., 2008; Bena and Ondko, 2012). It is also accepted that smaller firms are more informationally opaque and face greater financing constraints than large firms (Berger and Udell, 1998). The question is, therefore, whether financial development plays different roles in accessing external finance by firms of different sizes. To ease this concern, I re-estimate Eq.4-1 and Eq.4-2 by grouping the sample into different firm sizes: small, medium, and large firms. Following the standard WBES definition, firm sizes are defined based on number of employees (small for less than 20; medium for 20-99 and large for more than 100). In addition, in order to ensure the difference of coefficients are statistically significant over firm sizes, I report the results at the bottom of models.

Table 4-6 presents the estimation results by grouping firm sizes and Models 1-3 in Panel A and Models 7-9 in Panel B are for bank finance for working capital finance and fixed asset investment respectively. Models 4-6 in Panel A and Models 10-12 in Panel B show results of SMEs on using non-bank institutions as the source of working capital finance and fixed asset investment respectively. Firstly, in Panel A, the coefficients of $FD_{LL/GDP}$ are positive and significantly significant in Models 1-5, and in Model 6 the coefficient of $FD_{LL/GDP}$ is positive but statistically insignificant. The results show clear evidence on the variation of earlier identified financial development effects across firm sizes. Secondly, the positive and significant coefficients of $FD_{LL/GDP}$ (Models 7-9, Panel B) indicate financial development plays a significant role in using bank finance as the source of fixed asset investment for each firm size. Models 10-12 display a positive and statistically significant coefficient of $FD_{LL/GDP}$ on using non-bank finance for small

firm (Model 10) but not significant for medium (Model 11) and large firm (Model 12). In addition, the coefficients of $FD_{LL/GDP}$ on the sources of fixed asset investment for small firm (Models 7 and 10) have a greater magnitude and greater significant level than that for medium firm (Models 8 and 11) and large firm (Models 9 and 12). Given the significant coefficients in Models 7 and 10, empirically, small firms use more external finance from bank finance and non-bank finance to finance fixed asset investment by 3.04% and 9.04%, respectively, with a standard deviation (0.31) increase in $FD_{LL/GDP}$. Besides, t test results for the differences in the coefficients for small firms versus medium-sized firm and medium-sized firm versus large firm are all statistical significance at the 1% level, suggesting that the variation of the effect is statistically meaningful. To a certain extent, the results indicate a beneficial effect of financial development on small firms obtaining external finance from both bank and non-bank institutions as the sources of both working capital and fixed asset investment, and there is little evidence that large firms benefit from financial development to obtain finance from non-bank institutions. The results imply that financial development contributes to small business finance by processing information and thereby reduce information asymmetrically between small firms and financial institutions. In addition, the aim of non-bank institutions, e.g. microbanks, is to provide financial services to low-income communities and small business customers who face financial constraints in accessing bank finance. As indicated by Cull et al. (2014), the microbanks are micro not due to their institutional scale but because of the scale of typical transactions with customers. This is probably why there is an insignificant relation between financial development and the use of non-bank finance by large firms.

Table 4-6: Robustness Tests: Alternative sampling

This table reports the results for robustness teste of Eq.4-1 (Models 1-6) and Eq.4-2 (Models 7-12) by grouping samples into different sizes. Firm size is based on the number of employees and defined as small (<20), medium (20-99) and large (100 and over). Dependent variables are the proportion of working capital (Panel A) and fixed assets investment (Panel B) obtained by sample firms. All estimations control for industry and year fixed effects and include a full set of control variables. T tests for differences in the coefficients for small versus medium-sized firms and medium versus large firms are at the bottom of models. The regressions are run with OLS with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level, respectively.

	Small size	Medium size	Large size	Small size	Medium size	Large size
Panel A: Financial development and sources of working capital finance						
VARIABLES		*W.CAP.B*			*W.Cap.NB*	
	(1)	(2)	(3)	(4)	(5)	(6)
$FD_{LL/GDP}$	8.9883***	5.7081***	4.4345***	9.2653***	4.9222*	3.6304
	(1.1110)	(0.9544)	(1.1537)	(2.8645)	(2.8317)	(3.7760)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Ye	Yes	Yes
Constant	49.1043***	51.6499***	57.3588***	111.0043***	42.8927***	37.2871**
	(4.4106)	(4.5244)	(18.6776)	(24.3885)	(9.6732)	(14.6579)
Observations	8,894	10,909	7,504	1,689	1,310	743
R-squared	0.0583	0.0831	0.0893	0.0729	0.0378	0.0340
Adj R-squared	0.0559	0.0812	0.0865	0.0601	0.0205	0.0045
F-statistic	23.89***	42.89***	31.91***	5.69***	2.19***	1.15
P-value	*0.000*			*0.000*		
		0.000			*0.000*	
Panel B: Financial development and sources of fixed asset investment						
VARIABLES		*F.Ass.B*			*F.Ass.NB*	
	(7)	(8)	(9)	(10)	(11)	(12)
$FD_{LL/GDP}$	9.8132***	4.5572***	3.3497*	29.1626***	-3.6279	-4.1551
	(2.1794)	(1.6300)	(1.8210)	(7.1643)	(6.7961)	(9.0811)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	55.5069***	42.3834***	75.5967***	22.2972	22.6543	94.0739***
	(9.1015)	(7.8201)	(8.8991)	(21.6010)	(22.0894)	(33.2820)

Observations	3,324	5,021	4,382	544	541	344
R-squared	0.0669	0.0525	0.0645	0.2493	0.0922	0.0862
Adj R-squared	0.0604	0.0481	0.0595	0.2161	0.0537	0.0235
F-statistic	10.29***	12.03***	13.06***	7.51***	2.39***	1.38
P-value	*0.000*	*0.000*		*0.9273*	*0.000*	

4.4.2.2 Alternative measures of financial development

Next, I check the robustness of baseline results by using alternative financial development measures to make sure the earlier results are not subject to how financial development is measured. I construct two alternative proxies to evaluate the degree of financial development in addition to *liquid liabilities to GDP* ($FD_{LL/GDP}$) used in the baseline analysis. First, following Li et al. (2018), I use the ratio of domestic credit to private sector to GDP ($FD_{PC/GDP}$) to evaluate the degree of financial market development. Second, following Bena and Ondko (2012), I introduce one indicator of stock market, stock market total value traded to GDP ($FD_{ST/GDP}$), to measure financial development. Existing evidence has shown that stock market development taking place in tandem with other aspects of financial development. For example, Demirgüç-Kunt and Maksimovic (1996) find that countries with well-developed stock markets also have well-developed banks and non-bank financial intermediaries, while countries with weak stock markets tend to have weak development of banks and other financial intermediaries.

With each alternative measure of financial development, I re-estimate the baseline specification (Eq.4-1 and Eq.4-2) and report the results in Table 4-7. The baseline regression results (Table 4-5) are fully retained. It shows that the coefficients of $FD_{PC/GDP}$ (Models 1, 2, 5 and 6) are all positive and statistically significant. This result verifies the significant and important role played by financial development in the country where SMEs operate. Quantitatively, for example, an increase of $FD_{PC/GDP}$ by one standard deviation (0.30) would increase the proportion of working capital and fixed asset investment by SMEs from banks and non-bank institutions by 2.13% and 6.80%, respectively. Focusing on stock market development, the coefficients of $FD_{ST/GDP}$ on both working capital finance (Models 3 and 4) and fixed asset investment (Model 7) from

banks are positive and statistically significant. However, the result (Model 8) suggests that there is an insignificant relation between stock market development and SMEs using non-bank finance as the source of fixed assets investment. There are two possible reasons to explain such a result. First, existing studies have provided evidence that, in developing economies, large firms become more levered with the stock market development, whereas stock market development does not significantly affects small firms (Demirgüç-Kunt and Maksimovic, 1996). In this chapter, most of sample SMEs in WBES database are from emerging or under-developed countries. Second, due to the unreliable information disclosure and high transaction costs (Mateev et al., 2013), SMEs have very limited access to equity market; hence, SMEs are less sensitive to the degree of stock market development than large firms. In addition, it should be noted that, due to missing value of variables, the number of observations in Model 8 is relatively smaller than that in other models.

Overall, consistent with baseline results, Table 4-7 shows clear evidence on the favourable effects of financial development measured by both the ratio of domestic credit to private sector to GDP ($FD_{PC/GDP}$) and the ratio of stock market total value traded to GDP ($FD_{ST/GDP}$) on SMEs' access to external finance.

Table 4-7: Robustness Test: Alternative measures of financial development

The table presents regression coefficients and standard errors (in parentheses) for robustness tests of alternative measures of financial development, where in Models 1, 2, 5 and 6, financial development is measured by the ratio of domestic credit to private sector to GDP ($FD_{PC/GDP}$). In Models 3,4,7 and 8, financial development is measured by stock market total value trade to GDP ($FD_{ST/GDP}$). All estimations control for industry and year fixed effects and include a full set of control variables. T test for differences in the coefficients for using finance from bank versus non-banks is at the bottom of models. The regressions are run with OLS with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	W.Cap.B	W.Cap.NB	W.Cap.B	W.Cap.NB	F.Ass.B	F.Ass.NB	F.Ass.B	F.Ass.NB
$FD_{PC/GDP}$	10.1411***	3.5251*			7.0826***	22.6516***		
	(0.8704)	(2.1131)			(1.5670)	(5.2111)		
$FD_{ST/GDP}$			0.0470***	0.1240***			0.0483*	-0.1060
			(0.0161)	(0.0323)			(0.0255)	(0.0905)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	44.8154***	44.9805***	32.0345***	40.4687***	36.0713***	21.8268*	40.2304***	30.8932
	(8.7827)	(5.4218)	(3.4015)	(7.4460)	(5.1621)	(12.1386)	(8.7226)	(18.8551)
Observations	20,407	3,077	14,351	1,990	8,587	1,119	6,082	715
R-squared	0.0633	0.0468	0.0776	0.0586	0.0482	0.1533	0.0549	0.1849
Adj R-squared	0.0622	0.0393	0.0761	0.0476	0.0455	0.1347	0.0512	0.1577
F-statistic	57.36***	6.25***	52.41***	5.32***	18.07***	8.25***	14.67***	6.81***
P-value	*0.000*		*0.000*		*0.000*		*0.000*	

4.4.2.3 Alternative specification of financial development

As a robustness test, I explore whether the financial development has a lagged effect on SME financing behaviour. More specifically, I introduce one-year and two-year lagged values of liquid liabilities to GDP as an alternative specification to examine the effects of financial development on the access to finance by SMEs.

Results are reported in Table 4-8 where Models 1, 2, 5 and 6 use one-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-1}$) to measure financial development, and Models 3, 4, 7 and 8 employ two-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-2}$). As shown, the coefficients of both lagged values are positive and statistically significant in all models. Consistent with baseline findings, the results provide clear evidence supporting the important role played by financial development in accessing external finance by SMEs. Quantitatively, for example, with an increase of one-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-1}$) by one standard deviation (0.31), SMEs would obtain additional bank finance by 2.33 % and 2.07 % for working capital and fixed asset investment (Models 1 and 5), respectively, and obtain additional non-bank finance by 2.16 % and 3.75 % for working capital and fixed asset investment (Models 2 and 6), respectively. T test results for differences in the coefficients for bank versus non-bank financial institutions are all statistical significance at the 1% level, as shown at the bottom of models.

Table 4-8: Robustness Tests: Alternative specification of financial development

This table shows the results for robustness tests of Eq. 4-1 (Models 1- 4) and Eq. 4-2 (Models 5 – 8) by using alternative specification of financial development. Models 1, 2, 5 and 6 use one-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-1}$) to measure financial development, and Models 3, 4, 7 and 8 employ two-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-1}$). All estimations control for industry and year fixed effect and include full set of control variables. T test for differences in the coefficients for using finance from bank versus non-banks is at the bottom of models. The regressions are run with OLS with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	W.Cap.B	W.Cap.NB	W.Cap.B	W.Cap.NB	F.Ass.B	F.Ass.NB	F.Ass.B	F.Ass.NB
$FD_{LL/GDPt-1}$	7.5232***	6.9540***			6.6751***	12.1064**		
	(0.7162)	(1.9998)			(1.2906)	(4.8528)		
$FD_{LL/GDPt-2}$			6.7027***	5.7432***			6.3429***	10.6324**
			(0.6899)	(1.9280)			(1.2456)	(4.7582)
Other control variable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	58.89644***	52.05823***	59.8191***	90.1041***	53.5415***	50.9223	53.2952***	51.1738
	(8.936312)	(6.2527)	(8.92579)	(16.8327)	(5.7512)	(34.1574)	(5.7149)	(34.1716)
Observations	20,305	3,093	20,424	3,102	8,456	1,121	8,495	1,126
R-squared	0.0689	0.0567	0.0683	0.0559	0.0553	0.1463	0.0565	0.1455
Adj R-squared	0.0678	0.0490	0.0671	0.0482	0.0525	0.1268	0.0537	0.1261
F-statistic	60.04***	7.38***	59.79***	7.29***	19.75***	7.50***	20.28***	7.49***
P-value	*0.000*		*0.000*		*0.000*		*0.000*	

4.4.3 Additional Tests: the moderating effects of legal system and financial crisis

The results so far have shown primary and robust evidence supporting the important role played by financial development in improving SMEs' access to finance from both bank and non-bank institutions. In addition, relevant literature on law, finance and economic growth has provided both theoretical and empirical evidence on the effects of legal and institutions environment on the nature of financial contracts and thereby corporate financial activities (La Porta et al., 1998; Rajan and Zingales, 2001). Besides, the access to external finance by SMEs are also affected by economic shocks, such as financial crisis (Fernández et al., 2018). In this section, I continue to investigate the possible factors which may moderate the effects of financial development on SME's access to finance.

4.4.3.1 Common law vs. Civil law

Previous studies have identified the importance of legal origin of country in explaining the obstacles that firms face in accessing external finance (Demirgüç-Kunt and Levine, 2005). I further explore how the financial and legal environment at country level would affect the access to external finance from bank and non-bank institutions by SMEs, in terms of both short term and long term finance. The sample countries are classified by legal systems into two groups, common law countries (24% sample countries) and civil law countries (53% sample countries). Table 4-9 provides the mean value of each indictor of financial development between common law countries and civil law countries, showing small difference of financial development in two groups. Table 4-10 reports results for estimations of Eq.4-1 and Eq.4-2 in common law and civil law countries, respectively. In addition, t test results for the differences in the coefficients for using

external finance in common law versus in civil law countries are reported at the bottom of table.

The results as shown in Table 4-10, indicate that the favourable effect of financial development on the access to external finance for SMEs are stronger in countries with a common law system (stronger investor protection) than for those in a civil law system (weaker investor protection). First, the coefficients of $FD_{LL/GDP}$ in all regression specifications are economically greater as well as statistically significant at the 0.01 level in common law countries (Models 1, 3, 5 and 7). In civil law countries (Models 2, 4, 6 and 8), the coefficients of $FD_{LL/GDP}$ are positive in all models but just statistically significant in Models 2 and 6. More specifically, the magnitude of the coefficients of $FD_{LL/GDP}$ in common law countries is tenfold as large as that in a civil law country. For example, the coefficient of $FD_{LL/GDP}$ on using bank finance as source of fixed assets investment (Model 5) is 38.20, comparing with 6.14 in all sample countries (Table 4-5) and 4.47 in civil law countries (Model 6, Table 4-10). The results suggest that financial development plays a much more important role in accessing to external finance by SME in a common law country than that in a civil law country. Second, the result provides evidence that, in a common law country, SMEs' access to external finance as the sources of fixed asset investment is more sensitive to the degree of financial development than that as the sources of working capital. Third, in common law countries, the effect of financial development on using bank finance is economically bigger than that of using non-bank finance. This effect applies to both working capital and fixed asset investment. More specifically, the marginal effect suggests with $FD_{LL/GDP}$ increased by one standard deviation (0.31), SMEs use 9.39% more for working capital and 11.84% more for fixed assets investment from banks. The incremental effect is economically significant where the mean (standard deviation) proportion of bank finance is 41.19% (26.59%) and 62.32%

(31.48%), respectively. Previous research has suggested that collateral plays an important role in accessing external finance by SMEs (Voordeckers and Steijvers, 2006). The different characteristic between working capital finance and fixed asset investment is whether providing collateral to financial institutions. Hence, the law with strong investor protection provides the favourable legal environment for financial institutions to claim collateral when default on finance on fixed assets investment than on working capital which is usually not collateralised. In addition, as some non-bank institutions make lending decisions without requiring collateral or are more flexible than most commercial banks on the kinds of collateral (Cull et al., 2014), this is a possible reason to explain why the effect of financial development on using bank finance is economically greater than that on using non-bank finance in countries with strong investor protection.

In order to further explain the moderating role of legal system, in Table 4-10-1, I include an interaction of a country's legal system with $FD_{LL/GDP}$ in Eq.4-1 and Eq.4-2, respectively. The model is showing as follow:

$$Working\ capital\ financing_{\ i,j,t,s} = \partial + \beta_1\ Financial\ development_{j,t} + \beta_2\ Law_{i,j} + \beta_3\ Law_{i,j} * Financial\ development_{j,t} + \beta_4\ Loan_{i,j,t} + \beta_5\ Account_{i,j,t} + \beta_6\ Subsidiary_{i,j,t} + \beta_7\ Firm\ Age_{i,j,t} + \beta_8\ Foreign_{i,j,t} + \beta_9\ Government_{i,j,t} + \beta_{10}\ Exp_{i,j,t} + \beta_{11}\ Finance\ Constraint_{i,j,t} + \beta_{12}\ Small_{i,j,t} + \beta_{13}\ Financial\ Statements_{i,j,t} + \beta_{14}\ GDP\ per\ capita_{j,t} + \beta_{15}\ Inflation_{j,t} + \beta_{16}\ GovIndex_{j,t} + Year_t + Industry_k + \varepsilon_{i,j} \qquad \text{(Eq.4-3)}$$

$$Fixed\ assets\ investment\ financing_{\ i,j,t,s} = \partial + \beta_1\ Financial\ development_{j,t} + \beta_2\ Law_{i,j} + \beta_3\ Law_{i,j} * Financial\ development_{j,t} + \beta_4\ Loan_{i,j,t} + \beta_5\ Account_{i,j,t} + \beta_6\ Subsidiary_{i,j,t} + \beta_7\ Firm\ Age_{i,j,t} + \beta_8\ Foreign_{i,j,t} + \beta_9\ Government_{i,j,t} + \beta_{10}\ Exp_{i,j,t} + \beta_{11}\ Finance\ Constraint_{i,j,t} + \beta_{12}\ Small_{i,j,t} +$$

$\beta_{13}\ Financial\ Statements_{i,j,t} + \beta_{14}\ GDP\ per\ capita_{j,t} + \beta_{15}\ Inflation_{j,t} +$

$\beta_{16}\ GovIndex_{j,t} + Year_t + Industry_k + \varepsilon_{i,j}$ (Eq.4-4)

where I add the new variables, $Law_{i,j}$, and the interaction term between *Financial development*$_{j,t}$ and $Law_{i,j}$. Specifically, $Law_{i,j}$ is a dummy variable, which equals one for common law country and zero for civil law country. Hence, the estimated coefficient of β_3 indicates the difference effects of $FD_{LL/GDP}$ for SMEs operating in common law country. According to the coefficients of the interaction term, the marginal effects of $FD_{LL/GDP}$ increased by one standard deviation (0.31) in common law country are 8.89% on $W.Cap._B$, 6.55% on $W.Cap._{NB}$ and 8.02% on $F.Ass._B$. The evidence consistently suggests legal systems plays an important role in moderating the effects of financial development on SME finance.

Taken together, the results shown in Table 4-10 and Table 4-10-1 demonstrate that financial development is more effective on the access to external finance from both bank and non-bank institutions by SMEs in common law countries than that in civil law countries. Consistent with Qian and Strahan (2007), the strong creditor rights improve the finance availability for SMEs as in the presence of better legal protection during bankruptcy and reorganisation, financial institutions are more likely to provide credit on favourable terms.

Table 4-9: Distribution of indictors for financial development varies legal systems

This table reports the mean values of indictors to measure financial development varies legal systems. T tests on group mean differences and *** denotes statistical significance at 1% level.

Variables	Legal origin	
	Common Law countries	Civil Law countries
$FD_{LL/GDP}$	0.47	0.50***
$FD_{PC/GDP}$	0.39	0.45***
$FD_{ST/GDP}$	0.20	0.13***

Table 4-10: Additional Tests: Financial development and SME finance varies legal systems

This table reports the results of how financial development impacts on SME financing decisions in different legal environments. The sample countries are divided into common law and civil law countries. Common law countries have a greater investor protection than civil law countries. Models 1,3 and Models 5,7 report the effect of financial development on working capital finance and fixed asset investment in common law countries respectively. Models 2, 4 and Models 6, 8 report the effect of financial development on working capital finance and fixed assets investment in civil law countries respectively. All estimations control for industry and year fixed effects and include a full set of control variables. T test on the difference in the coefficients for common law versus civil law countries is at the bottom of models. The regressions are run with OLS with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

VARIABLES	*W.Cap.B*		*W.Cap.NB*		*F.Ass.B*		*F.Ass.NB*	
	Common	Civil	Common	Civil	Common	Civil	Common	Civil
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$FD_{LL/GDP}$	30.2844***	4.8008***	18.0249***	1.7291	38.1947***	4.4731***	35.9369***	5.9408
	(2.4885)	(0.8677)	(4.7731)	(2.5478)	(5.1914)	(1.4966)	(12.4092)	(6.4259)
Other Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	20.9982***	36.0107***	32.8351	26.7979**	54.4300**	37.2190***	1.9765	33.9383
	(4.9118)	(5.8222)	(9.9776)	(11.2326)	(9.8737)	(9.2237)	(35.8867)	(29.6189)
Observations	6,443	11,695	1,103	1,580	1,927	5,720	306	661
R-squared	0.1847	0.0281	0.1081	0.0576	0.1974	0.0613	0.2742	0.0684
Adj R-squared	0.1820	0.0262	0.0900	0.0436	0.1881	0.0573	0.2178	0.0347
F-statistic	66.13***	14.67***	5.95***	4.13***	21.28***	15.49***	4.86***	2.03**
P-value	*0.000*		*0.000*		*0.000*		*0.000*	

Table 4-10-1: Additional Tests: Financial development and SME finance varies legal systems

The table shows regression coefficients and standard errors (in parentheses) explaining the effect of financial development on the accessing to external finance by examining the legal systems. The dependent variables are the proportion of using external financing sources. Models 1 and 2 report the effect of financial development on working capital finance. Models 3 and 4 report the effect of financial development on fixed assets investment. All estimations control for industry and year fixed effects and include a full set of control variables. T test on the difference in the coefficients for common law versus civil law countries is at the bottom of models. The regressions are run with OLS with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively**.**

	(1)	(2)	(3)	(4)
VARIABLES	*W.Cap.B*	*W.Cap.NB*	*F.Ass.B*	*F.Ass.NB*
$FD_{LL/GDP}$	3.8377***	1.0055	2.7565*	7.1980
	(0.7957)	(2.3511)	(1.4296)	(5.9051)
$FD_{LL/GDP}$ * Law	24.7965***	20.1091***	23.1153***	16.6456
	(1.9242)	(3.9457)	(3.6921)	(10.4475)
Law	-12.2456***	-6.0905***	-10.0587***	-15.5207***
	(1.1894)	(2.1574)	(2.2890)	(5.6787)
Other Control Variables	Yes	Yes	Yes	Yes
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Constant	46.3039***	39.1297***	48.7979***	24.2410
	(3.6370)	(7.2152)	(6.7072)	(18.4270)
Observations	18,138	2,683	7,647	967
R-squared	0.0818	0.0570	0.0601	0.1597
Adj R-squared	0.0806	0.0481	0.0569	0.1374
F-statistic	64.58***	6.42***	18.73***	7.15***
P-value	*0.000*		*0.000*	

4.4.3.2 Financial crisis vs. non-financial crisis

Prior studies support the view that SMEs rely more on bank finance and are more likely to be financially constrained than large firms (Stiglitz and Weiss, 1981; Beck et al., 2008), especially in a financial crisis (Ryan et al., 2014). Recently, empirical studies have provided empirical evidence on the access to finance by small firms since 2008 financial crisis (Lee et al., 2015; McGuinness et al., 2018). Following this route, I also explore whether the effects of financial development on the access to external finance by SMEs differ in financial crisis and after financial crisis period. I define financial crisis period as that between 2007 and 2009, and after crisis period is from 2010 to 2016.

Table 4-11 reports the results in financial crisis period (Models 1, 3, 5 and 7) and after financial crisis period (Models 2, 4, 6 and 8). During financial crisis, the coefficients of $FD_{LL/GDP}$ are positive in all regression specifications, and statistically significant, except in Model 5. Specifically, the coefficients of $FD_{LL/GDP}$ on sources of working capital during financial crisis (Models 1 and 3) are greater than those after financial crisis (Models 2 and 4). This result provides clear evidence that financial development plays a much more important role in supporting the access to external finance as sources of working capital by SMEs in financial crisis than that after financial crisis. Meanwhile, the result shows that during financial crisis, the coefficient of $FD_{LL/GDP}$ in Model 3 is twice as large as that in Model 1, suggesting that during financial crisis, using non-bank finance is more sensitive to the degree of financial development than using bank finance. Focusing on fixed assets investment during financial crisis (Models 5 and 7), the coefficient of $FD_{LL/GDP}$ is positive and significant on using non-bank finance at 0.1 level (Model 7) but insignificant for bank finance (Model 5). The results suggest that, in financial crisis period, financial development improves SMEs access to non-bank finance and provides evidence that the long term credit of bank to SMEs has decreased in financial crisis.

For robustness, I also examine this finding by using interaction term between $Financial\ development_{j,t}$ and $Fin\_Crisis_{i,t}$ in Eq. 4-1 and Eq. 4-2, and estimate the model:

$$Working\ capital\ financing\ _{i,j,t,s} = \partial + \beta_1\ Financial\ development_{j,t} +$$
$$\beta_2\ Fin\_Crisis_{i,t} + \beta_3\ Fin\_Crisis_{i,t} * Financial\ development_{j,t} + \beta_4\ Loan_{i,j,t} +$$
$$\beta_5\ Account_{i,j,t} + \beta_6\ Subsidiary_{i,j,t} + \beta_7\ Firm\ Age_{i,j,t} + \beta_8\ Foreign_{i,j,t} +$$
$$\beta_9\ Government_{i,j,t} + \beta_{10}\ Exp_{i,j,t} + \beta_{11}\ Finance\ Constraint_{i,j,t} + \beta_{12}\ Small_{i,j,t} +$$

$$\beta_{13}\, Financial\ Statements_{i,j,t} + \beta_{14}\, GDP\ per\ capita_{j,t} + \beta_{15}\, Inflation_{j,t} + \beta_{16}\, GovIndex_{j,t} + Industry_k + \varepsilon_{i,j} \quad \text{(Eq.4-5)}$$

$$Fixed\ assets\ investment\ financing_{\ i,j,t,s} = \partial + \beta_1\, Financial\ development_{j,t} + \beta_2\, Fin\_Crisis_{i,t} + \beta_3\, Fin\_Crisis_{i,t} * Financial\ development_{j,t} + \beta_4\, Loan_{i,j,t} + \beta_5\, Account_{i,j,t} + \beta_6\, Subsidiary_{i,j,t} + \beta_7\, Firm\ Age_{i,j,t} + \beta_8\, Foreign_{i,j,t} + \beta_9\, Government_{i,j,t} + \beta_{10}\, Exp_{i,j,t} + \beta_{11}\, Finance\ Constraint_{i,j,t} + \beta_{12}\, Small_{i,j,t} + \beta_{13}\, Financial\ Statements_{i,j,t} + \beta_{14}\, GDP\ per\ capita_{j,t} + \beta_{15}\, Inflation_{j,t} + \beta_{16}\, GovIndex_{j,t} + Industry_k + \varepsilon_{i,j} \quad \text{(Eq.4-6)}$$

where $Fin\_Crisis_{i,t}$ is a dummy variable that takes a value of 1 for financial crisis (between 2007 and 2009) and 0 for after financial crisis (between 2010 and 2016), and the interaction term, $Fin\_Crisis_{i,t} * Financial\ development_{j,t}$ in the equation to show that the effect of financial development on accessing to external finance by SMEs varies with different financial periods.

Table 4-11-1 reports the regression results by estimating Eq. 4-5 and 4-6. In Models 1 and 2, the coefficient estimates of the interaction terms where the financial development is measured by $FD_{LL/GDP}$. $Fin\_Crisis * FD_{LL/GDP}$ are positive and statistically significant at 1% level. It shows that the effect of financial development is more beneficial for the access to external sources by SMEs in financial crisis. To be more concrete, the marginal effect of $FD_{LL/GDP}$ on $W.Cap._B$ (Model 1) and $W.Cap._{NB}$ (Model 2) for SMEs in financial crisis period are 16.1095 (=6.5926 + 9.5169) and 24.4811 (=7.7128 + 16.7983) respectively. Such results indicate that with $FD_{LL/GDP}$ increased by one standard deviation (0.31), SMEs use more bank finance by 4.99% and non-bank finance by 7.59% to finance working capital.

The results above have provided evidence to verify the effect of financial development on the access to external finance in financial crisis period. Following this, I further explore the differences in the effect of financial development on SMEs' external finance during different periods within different legal systems. The results are reported in Table 4-12 where Panel A and Pane B show the subsample analysis in and after financial crisis respectively. Panel A shows that, during financial crisis, with a greater degree of financial development, SMEs obtain more external finance for both working capital and fixed asset investment in common law countries than that in civil law countries. For instance, according to the coefficients reported in Models 1 and 3 (Panel A) and with one standard deviation increases in $FD_{LL/GDP}$, SMEs use more bank finance by 6.54% and non-bank finance by 16.03% to finance working capital. However, there is little evidence supporting the significant effect of financial development in determining the sources of both short term and long term external finance by SMEs in civil law countries (Models 2 and 4) during financial crisis. In addition, the results in Panel B also show that after financial crisis, legal systems moderate the effect of financial development on accessing to external finance. Overall, the results suggest that strong investor protection contributes to the favourable effect of financial development on the access to external finance by SME in financial crisis period.

Table 4-11: Additional Tests: Financial development and SME finance varies financial period

This table reports the results of Eq.4-1 and Eq.4-2 over different period. Models 1, 3, 5 and 7 and Models 2, 4, 6 and 8 report the results in financial crisis (between 2007 and 2009) and after financial crisis (between 2010 and 2016), respectively. Models 1- 4 present the regressions for the access to external finance as sources of working capital. Models 5-8 present the regressions for the sources of fixed asset investment. All estimations control for industry and year fixed effects and include a full set of control variables. T test for differences in the coefficients for financial crisis versus after financial crisis is at the bottom. The regressions are run with OLS with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

VARIABLES	W.Cap.B		W.Cap.NB		F.Ass.B		F.Ass.NB	
	F_crisis	After F_crisis	Fcrisis	After F_crisis	F_crisis	After-F_crisis	F_crisis	After F_crisis
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$FD_{LL/GDP}$	11.7117***	7.4259***	27.1018***	7.5187***	-1.4067	5.1878**	28.3986*	8.3311*
	(2.3545)	(0.7642)	(6.8954)	(1.8447)	(3.6297)	(1.5026)	(15.8100)	(4.9421)
Other control variables								
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	50.0872***	83.9991***	36.2474**	54.3205***	59.7654***	74.2877***	31.8226	24.5635
	(6.9138)	(2.8507)	(14.4866)	(57811)	(6.3757)	(6.1839)	(35.0307)	(15.2385)
Observations	3,544	12,955	521	2,096	2,673	4,225	192	723
R-squared	0.0232	0.0721	0.0915	0.0310	0.0295	0.0602	0.1080	0.1395
Adj R-squared	0.0188	0.0709	0.0626	0.0235	0.0237	0.0567	0.0320	0.1200
F-statistic	5.25***	62.82***	3.17***	4.16***	5.05***	16.86***	1.42	7.16***
P-value	*0.000*		*0.000*		*0.000*		*0.000*	

Table 4-11-1: Additional Tests: Financial development and SME finance varies financial periods

This table reports the results of Eq.4-5 and Eq.4-6 where I define *Fin*_Crisis takes a value of 1 for financial crisis (between 2007 and 2009) and 0 for after financial crisis (between 2010 and 2016), and the interaction term $FD_{LL/GDP}$ * *Fin_Crisis* to show that the effect of financial development on accessing to external finance by SMEs varies with different financial periods. Models 1 and 2 present the regressions for the access to external finance as sources of working capital. Models 3 and 4 present the regressions for the sources of fixed asset investment. All estimations control for industry fixed effect and include a full set of control variables. T test on the difference in the coefficients for common law versus civil law countries is at the bottom of models. The regressions are run with OLS with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively**.**

	(1)	(2)	(3)	(4)
VARIABLES	W.Cap.B	W.Cap.NB	F.Ass.B	F.Ass.NB
$FD_{LL/GDP}$	6.5926***	7.7128***	4.4173***	11.2760**
	(0.7546)	(1.8725)	(1.3587)	(4.9148)
$FD_{LL/GDP}$*Fin_Crisis	9.5169***	16.7983***	-8.2932**	-6.1395
	(2.1768)	(5.3445)	(3.5994)	(12.6392)
Fin_Crisis	-7.2434***	-5.1918*	4.3809**	6.1807
	(1.3005)	(2.7790)	(2.0014)	(6.7374)
Other Control	Yes	Yes	Yes	Yes
Variables	Yes	Yes	Yes	Yes
Industry Fixed Effect				
Constant	77.5428***	51.8887***	70.2453***	29.0417**
	(2.5621)	(5.3933)	(4.8860)	(13.7960)
Observations	16,499	2,617	6,898	915
R-squared	0.0501	0.0384	0.0431	0.1128
Adj R-squared	0.0491	0.0317	0.0406	0.0950
F-statistic	48.32***	5.76***	17.22***	6.33***
P value	*0.000*		*0.000*	

Table 4-12: Financial development and SME finance in different financial crisis varies legal systems

This table reports the results of how financial development affects SME finance during and after financial crisis over legal systems. Panel A and B report the results in financial crisis (between 2007 and 2009) and after financial crisis (between 2010 and 2016), respectively. Models 1, 3, 5 and 7 present the regressions for subsample analysis in common law countries. Models 2, 4, 6 and 8 present the regressions for subsample analysis in civil law countries. Models 1- 4 report the effect of financial development on working capital finance, referring to sources from bank or non-bank institutions. Models 5-8 report the effect of financial development on fixed asset investment. All estimations control for industry and year fixed effects and include a full set of control variables. T test for the differences in coefficients for financial crisis versus after financial crisis is at the bottom. The regressions are run with OLS with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	W.Cap.B		W.Cap.NB		F.Ass.B		F.Ass.NB	
	Common	Civil	Common	Civil	Common	Civil	Common	Civil
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Financial development and SME finance during financial crisis varies legal systems								
$FF_{LL/GDP}$	21.0075**	1.9751	48.1000**	-6.3894	-14.8385	-6.2486	130.3911*	33.4753
	(9.0423)	(3.4862)	(21.2890)	(12.6395)	(19.1381)	(4.4436)	(678.5358)	(30.2621)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect								
Constant	71.8758***	49.5515***	108.5643**	4.4754	10.8785	62.7796***	121.5356	39.6043
	(22.1856)	(9.7958)	(46.4281)	(20.9319)	(43.4544)	(10.8849)	(179.8143)	(46.3228)
Observations	700	2,274	121	271	323	2,084	44	106
R-squared	0.1357	0.0059	0.2905	0.1402	0.1048	0.0368	0.3496	0.1704
Adj R-squared	0.1154	-0.0012	0.1813	0.0896	0.0580	0.0294	0.0552	0.0322
F-statistic	6.70***	0.83	2.66***	2.77***	2.24***	4.94***	1.17	1.23
P-value	*0.000*		*0.000*		*0.000*		*0.000*	
Panel B: Financial development and SME finance after financial crisis varies legal systems								
$FF_{LL/GDP}$	28.5523***	2.9843***	10.8075**	3.7230*	37.0416***	-0.2620	7.7270	1.4376
	(2.4823)	(0.8977)	(4.8484)	(2.2762)	(5.0340)	(1.8002)	(11.2197)	(6.4322)
Other control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect								
Constant	53.8309***	52.3156***	61.3625***	37.8778***	56.5106	59.3718***	10.6081	50.1836
	(5.5683)	(5.0711)	(10.2857)	(10.8980)	(11.3199)	(10.9676)	(24.6500)	(28.6761)
Observations	5,563	6,507	945	1,008	1,529	2,374	255	406
R-squared	0.1324	0.0144	0.0716	0.0378	0.2066	0.0543	0.2068	0.0625

Adj R-squared	0.1299	0.0120	0.0556	0.0222	0.1982	0.0479	0.1535	0.0239
F-statistic	52.90***	5.93***	4.47***	2.43***	24.61***	8.46***	3.88***	1.62*
P-value	*0.000*		*0.1524*		*0.000*		*0.000*	

4.5. Conclusion

Ample empirical evidence has shown that financial development has significantly contributed to finance and growth in both specific countries, for example U.S. (Rajan and Zingales, 1998), Vietnam (O'Toole and Newman, 2016), and cross-country, for example the European countries (Bena and Ondko, 2012). This chapter examines the effects of financial development and legal system on the access to external finance obtained from bank and non-bank institutions by SMEs, in terms of both short term (working capital) and long term (fixed assets investment) finance from a cross-country perspective. It contributes to the literature in a number of ways. First, it offers novel cross-country evidence on the favourable roles played by financial development and investor protection and important implications for policy makers to improve the institution environment where SME operate. Second, this chapter as the first cross-country empirical study in a particular area, extends existing literature by articulating how financial development and legal system would make differential impacts on the lending behaviour of banks and non-bank institutions when financing SMEs. Such a result highlights the important role of non-bank institutions in financing SMEs in different countries.

The principal findings from a cross-country sample covering 134 countries over the period of 2006 – 2016 are that, with a greater degree of financial development, SMEs are more likely to use external finance from both bank and non-bank institutions, in terms of financing both working capital and fixed asset investment. With development of financial market and institutions, the lower information and transactions costs reduce information asymmetry between financial institutions and SMEs and thereby promote allocation of capital to SMEs. Besides examining the benefits of financial development, this chapter documents that in long term finance demand, the use of finance from non-

bank institutions by SMEs is more sensitive to financial development at country level. In addition, the results by grouping samples into different firm sizes, provide clear evidence that small firms benefit more from a higher degree of financial development than medium and large firms. The research further explores the moderating effect of legal systems on the favourable role of financial development in improving the access to external finance by SMEs. In particular, the results support the view that the beneficial effect of financial development on access to external finance for SMEs are stronger in countries with common law system than for those in civil law countries.

Overall, this research provides additional empirical evidence supporting the important and significant role played by financial development and legal system in determining the sources of both long term and short term external finance by SMEs. In addition, the results shed light on the increasingly important role played by non-bank institutions in supplying external finance to SMEs in countries with a higher degree of financial development. The empirical results are robust to a wide range of model specifications and econometric concerns.

The findings provide implications for both policy makers and financial institutions. First, policy makers, especially those in emerging and under-developed countries, should further improve the effectiveness of institutional frameworks by which SMEs could reduce the transaction costs in their operation. An efficient formal institutional framework would help SMEs standardise their operating activities, such as accounting information disclosure. Another implication for policy makers is to further develop and support the nonbank financial institutions, which quickly diffuse across countries as the new alternative financing sources for small firms. The results in this study also provide clear evidence to acknowledge the increasingly important role played by non-bank institutions in providing finance for small firms. Non-bank institutions, e.g.

microfinance institutions and credit unions, depend on relationships and reputation and thereby perform more efficient monitor and enforce repayment than commercial banks (Arnott and Stiglitz, 1991). However, as their monitoring and enforcement mechanisms are insufficiently development, non-bank institutions would not substitute banks and serve the needs of higher end of the market (Ayyagari et al., 2010). Hence, regulators should pay greater attention to supervising and developing non-bank institutions. In addition, with the increased role of non-bank institutions in providing finance to SMEs, banks should develop innovative financial services to stabilise and extend SME clients in a competitive financial market.

Appendix 4-1: Financial development and legal system across countries

This table presents the country-level medians of key variables to measure financial development and legal system across countries. The firm-level data for 134 countries are drawn from the WBES for the period 2006-2016. Following existing studies, financial development is measured by Liquid liabilities/GDP, private credit/GDP and stock trade/GDP respectively, as reported by Column (2), (3), and (4). Column (5) indicates the legal system as measured by law origin.

Country	No. of firm-years	Liquid liabilities to GDP	Private credit to GDP	Stock trade to GDP	Law
	(1)	(2)	(3)	(4)	(5)
Afghanistan	872	27.67%	93.13%		Others
Albania	619	87.10%	37.99%		Civil law
Angola	734	13.68%	8.15%		Civil law
Antigua and Barbuda	145	98.32%	80.00%		Common law
Argentina	1530	22.77%	10.55%	1.29%	Civil law
Armenia	631	19.70%	24.85%	0.00%	Civil law
Azerbaijan	667	30.88%	25.46%		Civil law
Bahamas, The	125	77.01%	83.15%		Common law
Bangladesh	1912	48.33%	32.04%	0.89%	Common law
Barbados	111			0.76%	Common law
Belarus	483	25.31%	23.69%		Civil law
Belize	140	78.65%	62.39%		Common law
Benin	140	36.58%	20.84%		Civil law
Bhutan	445	69.72%	47.42%		Common law
Bolivia	792	43.64%	37.80%	0.01%	Civil law
Bosnia and Herzegovina	594	54.05%	52.84%		Civil law
Botswana	524	33.42%	20.48%		Others
Brazil	1428	64.24%	47.49%	42.46%	Civil law
Bulgaria	1281	62.75%	58.02%	15.16%	Civil law
Burkina Faso	334	24.18%	16.98%		Civil law
Burundi	406	24.00%	15.83%		Civil law
Cambodia	649	49.90%	44.72%		Civil law
Cameroon	292	20.41%	11.48%		Others
Cabo Verde	131	75.95%	57.96%		Civil law
Central African Republic	139	18.23%	10.10%		Civil law
Chad	131	15.09%	3.93%		Civil law
Chile	1454	36.57%	99.27%	26.63%	Civil law
China	1674	170.94%	130.00%	59.41%	Civil law
Colombia	1562	16.99%	33.36%	9.61%	Civil law
Congo, Rep.	135	24.24%	4.92%		Civil law
Congo, Dem. Rep.	1150	6.70%	3.92%		Civil law
Costa Rica	415	50.27%	45.29%	0.11%	Civil law
Croatia	776	61.73%	61.51%	7.30%	Civil law
Czech Republic	402	75.45%	51.42%	5.89%	Civil law
Côte d'Ivoire	480	28.38%	16.43%	0.99%	Civil law
Djibouti	248	82.44%	31.11%		Others
Dominica	146	82.67%	53.12%		Common law
Dominican Republic	249	18.93%	22.76%		Civil law
Ecuador	806	21.00%	21.14%		Civil law

Egypt, Arab Rep.	2302	68.86%	26.46%	4.45%	Civil law
El Salvador	776	82.37%	43.36%	0.91%	Civil law
Eritrea	171	113.26%	16.77%		Others
Estonia	440	66.49%	85.20%		Civil law
Fiji	138	48.79%	89.62%	0.41%	Common law
Gabon	160	20.78%	10.09%		Civil law
Gambia, The	167	37.67%	11.61%		Others
Georgia	655	22.22%	33.05%	0.06%	Civil law
Ghana	1121	27.49%	17.07%	0.40%	Common law
Grenada	140	99.47%	83.98%		Common law
Guatemala	813	37.10%	23.83%		Civil law
Guinea	216	19.29%	66.23%		Civil law
Guinea-Bissau	157	17.69%	2.05%		Civil law
Guyana	123	51.22%	37.25%		Others
Honduras	629	47.70%	44.14%		Civil law
Hungary	455	59.13%	46.52%	8.05%	Civil law
India	6978	74.28%	51.80%	35.78%	Common law
Indonesia	2094	33.08%	27.66%	15.95%	Civil law
Iraq	749	32.11%	5.41%		Others
Israel	390	76.04%	66.02%	19.01%	Common law
Jamaica	309	51.19%	26.41%		Common law
Jordan	447	116.53%	72.33%	10.20%	Civil law
Kazakhstan	906	32.45%	33.85%	0.29%	Civil law
Kenya	1132	39.43%	31.71%	3.28%	Common law
Kosovo	445	34.48%	34.34%		Civil law
Kyrgyz Republic	426	30.72%	15.66%	1.44%	Civil law
Lao PDR	850	28.70%	17.24%		Others
Latvia	485	46.83%	58.20%		Civil law
Lebanon	471	226.37%	98.64%	0.35%	Civil law
Lesotho	120	36.83%	12.82%		Others
Liberia	140	27.74%	12.20%		Common law
Lithuania	439	48.75%	43.11%		Civil law
Macedonia, FYR	627		43.46%	0.65%	Others
Madagascar	818	23.30%	11.92%		Others
Malawi	538	22.63%	11.40%	0.32%	Common law
Malaysia	686		125.24%	37.64%	Common law
Mali	831	27.59%	15.84%		Others
Mauritania	357	20.39%	18.84%		Others
Mauritius	340	98.47%	82.74%	3.85%	Civil law
Mexico	2160	24.24%	21.86%	9.53%	Civil law
Micronesia, Fed. Sts.	68	38.19%			Others
Moldova	603	52.32%	36.00%	0.24%	Others
Mongolia	615	39.54%	40.30%	0.35%	Civil law
Montenegro	234	51.13%	53.05%		Civil law
Morocco	294	106.95%	67.94%	3.02%	Civil law
Mozambique	448	23.73%	11.59%		Civil law
Myanmar	529		16.01%		Common law
Namibia	863	49.73%	49.72%	0.54%	Common law
Nepal	766	77.48%	58.03%		Others
Nicaragua	710	25.95%	26.37%		Others

Niger	139	16.66%	12.20%		Others
Nigeria	4332	19.75%	14.54%	0.90%	Common law
Pakistan	1768	38.73%	16.11%	0.24%	Common law
Panama	819	78.08%	83.45%	1.40%	Civil law
Paraguay	844	19.77%	14.72%		Civil law
Peru	1212	34.56%	25.19%	2.69%	Civil law
Philippines	1921	59.80%	41.88%	13.16%	Civil law
Poland	811	58.32%	51.08%	13.86%	Civil law
Romania	829	36.51%	38.49%	0.99%	Civil law
Russian Federation	4328	48.54%	44.69%	15.68%	Civil law
Samoa	104	34.14%	61.63%		Others
Senegal	1038	42.16%	33.16%		Others
Serbia	577	38.89%	42.54%	1.60%	Civil law
Sierra Leone	138	18.28%	8.11%		Others
Slovak Republic	422	60.71%	45.09%	0.20%	Civil law
Slovenia	420	63.21%	83.28%	2.06%	Civil law
Solomon Islands	131		37.33%		Civil law
South Africa	737	43.52%	160.12%	86.08%	Common law
South Sudan	728	18.46%	1.90%		Others
Sri Lanka	495	35.16%	27.78%	7.35%	Common law
St. Kitts and Nevis	142	119.65%	67.72%	0.67%	Common law
St. Lucia	134	90.62%	107.82%		Others
St. Vincent and the Grenadines	148	66.22%	51.83%		Common law
Sudan	614	17.46%	8.48%		Others
Suriname	143	44.08%	24.02%		Others
Swaziland	272	19.48%	21.29%	0.00%	Others
Sweden	486	65.52%	131.83%		Civil law
Tajikistan	630	13.13%	26.83%		Others
Tanzania	1107	29.03%	12.89%		Common law
Timor-Leste	258	27.89%	12.66%		Civil law
Togo	136	35.85%	19.75%		Civil law
Tonga	150	44.15%	47.85%		Common law
Trinidad and Tobago	269	62.26%	32.49%		Common law
Tunisia	436	67.89%	76.95%	1.00%	Civil law
Turkey	1839	48.47%	70.10%	45.46%	Civil law
Uganda	1222	22.91%	13.50%	0.06%	Common law
Ukraine	1496	40.57%	74.26%	0.18%	Civil law
Uruguay	982	41.59%	23.95%		Civil law
Uzbekistan	565			0.30%	Civil law
Vanuatu	126	93.43%	62.98%		Others
Venezuela, RB	724	24.38%	17.00%		Civil law
Vietnam	1379	94.28%	103.32%	21.38%	Civil law
West Bank and Gaza	411	54.79%	7.24%	1.93%	Others
Yemen, Rep.	738	29.87%	6.30%		Others
Zambia	1082	16.41%	15.82%		Common law

Appendix 4-2: Variable definition

Variables	Definition	Original source
Firm Level		
W.Cap.$_{B}$	% working capital is financed from banks: private and state-owned	WBES
W.Cap.$_{NB}$	% working capital is financed from non-bank financial institutions which include microfinance institutions, credit cooperatives, credit unions or finance companies	WBES
F.Ass.$_{B}$	% of total purchase of fixed assets was borrowed from banks: private and state-owned	WBES
F.Ass.$_{NB}$	% of total purchase of fixed assets was borrowed from non-bank Financial institutions which include microfinance institutions, credit cooperatives, credit unions or finance companies	WBES
Account	Dummy variables that takes on the value one if a firm has a checking or saving account, and zero otherwise	WBES
Loan	Dummy variables that takes on the value one if a firm has a line of credit or a loan from a financial institution and zero otherwise	WBES
Age (log)	Log value of total years that this firm has formally operations	WBES
Government	Dummy variables that takes on the value one if any government agency of state body has a financial stake in the ownership of the firm, and zero otherwise	WBES
Foreign	Dummy variables that takes on the value one if any foreign Company or individual has a financial stake in the ownership of the firm, and zero otherwise	WBES
Financing constraint	Dummy variable that takes on the value one if a firm considers there is financing obstacle, and zero otherwise	WBES
Financial statements	Dummy variable that takes on the value one if a firm has its annual financial statements checked and certified by an external auditor, and zero otherwise	WBES
Experience (Log)	Log value of year of experience in this sector that the top manager has	WBES
Subsidiary	Dummy variables that takes on the value one if the firm is part of larger firm and zero otherwise	WBES
Small size	A firm is defined as small if it has between 5 and 19 employees.	WBES
Country Level		
$FD_{LL/GDP}$	Liquid liabilities to GDP where liquid liabilities are also known as broad money, or M3. They are the sum of currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings	WDI

	deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2), plus travellers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents.	
$FD_{PC/GDP}$	Domestic credit to private sector to GDP and domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment.	WDI
$FD_{ST/GDP}$	The value of shares traded to GDP and the value is the total number of shares traded, both domestic and foreign, multiplied by their respective matching prices.	WDI
GDP per capital (log)	Log value of real per capital GDP	WDI
Inflation rate (log)	Log value of inflation rate and inflation is measured by the annual growth rate of the GDP implicit deflator	WDI
GovIndex	Governance Indicators which are produced by Worldwide Governance Indicators, including six dimensions of governance: control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law and voice and accountability.	WGI

Chapter 5 Financial Development, Legal Systems and SME Trade Credit Supply: Cross-country Evidence

5.1 Introduction

Existing literature has acknowledged that trade credit, as one of the most important sources of external financing, contributes to SME development (Bussoli and Marino, 2018; Lawrenz and Oberndorfer, 2018). Meanwhile, investment in account receivable as a business strategy has been concerned by both corporate practitioners and scholars. In European countries, averagely, the amount of trade receivable is about a quarter of total assets (Giannetti, 2003) with an even a higher percentage by SMEs (García-Teruel and Martínez-Solano, 2010). It has been found that the level of extending credits by firms to their customers affects firm growth, in terms of firm value (Lewellen et al., 1980), profitability (Pike and Cheng, 2001) and product market shares (Hill et al., 2012). Martínez-Sola et al. (2014) have shown that the significant effects of supplying trade credit on the profitability of SMEs are greater for financially unconstrained firms than financially constrained firms.

Empirical studies have also provided ample evidence on the role played by financial development in the determination of the availability of financial services (Beck et al., 2008), efficiency of financial institutions (Hermes et al., 2009), international trade (Becker et al., 2012) and so on. For example, Lei et al. (2018) provide cross-country evidence covering 45 countries in the period of 1990-2013 and suggest that financial development lowers the sensitivity of cash holdings to tangible assets and improves firm

growth. As suggested in the earlier chapter, SMEs, operating in a country with a higher level of financial development, obtain more bank and non-bank finance for both short-term and long-term finance. However, little is known about how financial development affects the redistributive role of capital through extending trade credit by SMEs to their customers.

Not only firms with better access to capital market, acting as intermediary for financial institutions, redistribute credit by issuing trade credits to financial constrained customers (Fisman and Love, 2003; Garcia-Appendini and Montoriol-Garriga, 2013; Carbo‐Valverde et al., 2016) but also small and financially constrained firms provide trade credit to their customers (McMillan and Woodruff, 1999; Marotta, 2005). Recent research focusing on Italian SMEs has indicated a positive relation between the level of local banking development and the provision of trade credit, suggesting that the trade credit policy is affected by the local banking development (Deloof and La Rocca, 2015).

In this study, firstly, I analyse how financial development affects the supply of trade credit by SMEs to explore the impacts of financial development on the redistribution of capital. Using a cross-country sample covering more than 100 countries over the period 2006-2016, the primary results support the important role played by financial development in the supply of trade credit by SMEs. SMEs in those countries with a higher level of financial development provide more trade credit to their customers and vice versa. The results are consistent with that of Demirguc-Kunt and Maksimovic (2001), indicating that financial development contributes to firms as agents for financial institutions channelling short term capital from financial institutions to the needs.

Literature (e.g. Palacín-Sánchez et al., 2018) has also suggested that the supply of trade credit by SMEs depends on country institutional factors. Therefore, I also consider the legal system in which SMEs operate because supply of trade credit to their

customers is related, not only to the financial capacity of the suppliers themselves, but also to their ability to recover debt from customers. Hence, I consider legal factors and jointly examine the impacts of financial development on the supply of trade credit by SMEs. I categorise sample countries according to the legal origin to measure legal environment, including common law and civil law legal systems. The results show that the favourable effects of financial development on the supply of credit by SMEs are stronger for countries with a common law system than for those with a civil law system.

In addition, in contrast to existing literature which has mainly focused on SMEs obtaining trade credit in financial crisis period, this study contributes to the literature by documenting how the provision of trade credit by SMEs is affected by financial development. In order to maintain a valuable long-term relationship, trade credit suppliers pay close attention to their customers' survival, hence will support customers that face temporary financial constraints (Cunat, 2007). Existing studies have also shown that firms with better access to finance or more liquidity provide more trade credit during financial crisis (Garcia-Appendini and Montoriol-Garriga, 2013; Carbo-Valverde et al., 2016). The results presented in this chapter show that the degree of financial development plays a much more important role in improving the supply of trade credit during financial crisis than after financial crisis period, further confirming the role played by financial development in the country where SMEs operate.

Finally, inspired by studies focusing on the relation between financial market and product market (Phillips and Sertsios, 2013), I further address the question that which product market would benefit from the additional trade credit extended. I distinguish the product market by domestic market and international market, and find that SMEs, operating in countries with higher levels of financial development, redistribute capital via trade credit to customers in domestic market rather than customers in international

market. The results imply financial market development contributes to the growth of firms operating in domestic markets.

This study, as the first cross-country empirical study, aims to investigate the impacts of financial development and legal system on the supply of trade credit by SMEs. It contributes to existing literature in two main aspects. First, it offers empirical cross-country evidence on the favourable roles played by financial development and investor protection on redistribution of financial liquidity. Second, it provides evidence to prove the role played by SMEs as agents for financial institutions in capital market and implications for policy makers to improve the institutional environment where SMEs operate.

The remainder of this chapter proceeds as follows. Section 5.2 reviews literature on SME trade credit supply, and how financial development affects SMEs decisions. Section 5.3 provides empirical specification, describes the data and reports summary statistics. The results of empirical analyses and those of additional tests are shown in Section 5.4. Section 5.5 summarises this chapter and provides implication for relevant policymakers and concludes limitations of this study.

5.2 Literature Reviews

5.2.1 SME trade credit

5.2.1.1 What is trade credit and why does it exist?

Trade credit arises when the supplier allows the delayed payment after the delivery of goods or the provision of services (García-Teruel and Martínez-Solano, 2010), and it

creates an account receivable (trade credit investment) for the supplier and an account payable (trade credit finance) for the buyer. More specifically, trade credit investment represents supplier acting as a financial intermediary to provide liquidity to its customer, while trade credit finance as one of the sources of short-term finance reduces the immediate capital requirement of a buyer. With delayed receipt of payment, trade credit suppliers effectively provides short-term debt to their clients. Trade credit, however, has three unique characteristics compared with other types of funding sources. First, trade credit is in-kind finance, and suppliers lend goods rather than cash (Burkart and Ellingsen, 2004); second, unlike bank loans or bonds, trade credit would be generally not subject to specific and formal borrowing contracts between the supplier and the client, and finally, trade credit is distributed by non-financial firms (Cuñat and Garcia-Appendini, 2012).

Previous theories and models on trade credit have investigated the reasons of trade credit supply based on market frictions. First, tax is one of the earliest explanations given to motivate trade credit developed by Brick and Fung (1984). If there are different tax brackets between the seller and the buyer, credit suppliers in high tax regimes are inclined to provide trade credit to buyers in lower tax regimes. Second, the transaction cost is a key factor to affect the trade credit. Trade credit as a mechanism could help firms forecast cash inflows or outflows (Ferris, 1981). The predictable cash flow allows both the buyer and seller to effectively manage their liquidity and thus reduces the associated costs of obtaining liquidity (Cuñat and Garcia-Appendini, 2012). Third, existing theories propose that trade credit is a response to imperfect market competition. Brennan et al. (1988) document that in concentrated product markets, suppliers would offer trade credit if credit customers have lower reservation price than cash customers or if by offering the same credit terms to all clients, by separating customers based on their credit quality. Finally, the problem of information asymmetries between both trade parties and outside

investors is a common explanation for the use of trade credit. Because sellers know the quality of the products better than buyers, trade credit is offered by sellers as a quality guarantee (Lee and Stowe, 1993). In addition, suppliers may more easily obtain operation information of their customers than banks through the normal business with their customers, or visiting their premises frequently (Cuñat and Garcia-Appendini, 2012).

5.2.1.2 Trade credit finance for SMEs

Trade credit is one of the most important sources of external financing for SMEs, especially for financially constrained firms (Lawrenz and Oberndorfer, 2018). Most previous empirical studies, which examine the relation between trade credit and bank credit for SMEs, have suggested both hypothesis and complementarity hypothesis.

The substitution hypothesis holds the view that firms use more trade credit when they respond to monetary tightening or face financial constraints in accessing bank finance (Garcia-Appendini and Montoriol-Garriga, 2013; Carbo-Valverde et al., 2016); hence, there is a substitute relation between trade credit and bank credit. The substitution relation implies that suppliers have certain advantages through business trade, act as financial intermediaries, and provide lending when banks cannot. Supporting evidence on the substitution hypothesis is available from bot single and cross country analysis. For example, using firm-level data in the USA over the period 1979-1982, Nilsen (2002) shows that small firms increase trade credit as a substitute source for bank loans during monetary contractions. Carbo-Valverde et al. (2016) propose that trade credit provides an alternative source of bank finance to SMEs during the recent crisis by a panel of over 40,000 Spanish SMEs, supporting the substitution hypothesis. Other recent single-country studies also provide empirical evidence to support this hypothesis, such as

Garcia-Appendini and Montoriol-Garriga (2013), Canto-Cuevas et al. (2016) and McGuinness and Hogan (2016). Regarding cross-country studies, Casey and O'Toole (2014), McGuinness et al. (2018) and (Palacín-Sánchez et al., 2018) provide evidence supporting the substitution hypothesis in EU SMEs.

In contrast, the complementarity hypothesis proposes that banks prefer to lend if firms obtain credit from their suppliers; hence, more trade credit leads to more bank credit and vice versa (Kohler et al., 2000; Kling et al., 2014). This is because trade credit, acting as a signal of reputation, mitigates the information asymmetries between bank and information opaque businesses, enhancing the access to bank finance for firms (Alphonse et al., 2006). Tsuruta (2015) uses firm-level data on small firms in Japan between 2006 to 2009 and suggests that small firms increase trade credit if they obtain more loan from banks. Using sample Italian SMEs, Agostino and Trivieri (2014) and Deloof and La Rocca (2015) also show a positive relation between bank and trade credit. Using cross country samples, Love and Zaidi (2010), for example, show that firms, which are constrained to bank lending, reduce the use and extension of trade credit based on a sample of SMEs in four East Asian countries before and after the financial crisis of 1998. In addition, the complementarity hypothesis has been supported by empirical evidence from European countries (Andrieu et al., 2018; Norden et al., 2018).

5.2.2 Trade credit investment for SMEs

SMEs not only use trade credit as an important source of short-term finance, but also supply credit to their customers as liquidity providers. What motivates a firm to provide trade credit? Existing literature has investigated the motivations from financial, operational and commercial perspectives.

Financial motives

Literature has pointed out that firms with greater creditworthiness and easier access to funds offer more trade credit to customers with limited access to capital markets directly (Schwartz, 1974; Emery, 1984; Petersen and Rajan, 1997). This is because due to the greater ability to collect information and the lower cost to monitor debtors, suppliers as financial intermediary, therefore face less information asymmetries than banks or other financial institutions. According to the information on customer's operational situation, suppliers may control better for the risk of trade credit investment by cutting off supply of the products. In addition, sellers know more information about product market than banks or other financial institutions; hence sellers have an advantage in the liquidation of the goods sold in the case of default (García-Teruel and Martínez-Solano, 2010), e.g., reselling these products to another customer.

Operational motives

As reported by Emery (1987), trade credit plays an important role in increasing sales and reducing operating costs for sellers. If demand fluctuates in product market, there are two options for sellers, allowing the selling price to fluctuate with the demand of product market, or varying production to match demand. The costs for both options, such as costs of information search and costs of production are high (Long et al., 1993), and therefore, trade credit as a useful tool stimulates demand of variable products in slack demand periods thereby smooths abnormal demand.

Commercial motives

Existing literature (Brennan et al., 1988; Mian and Smith Jr, 1992) has acknowledged that trade credit as a method of price discrimination by suppliers based on whether

delayed payment are allowed or not. In other words, extending the period of credit or improving the discount rate for early payment implies reduced price. Accordingly, the same product would be sold at different prices to customers. Suppliers can improve market shares by providing trade credit, especially for small firms with less market power. Besides, trade credit also works as a guarantee signal to customers (García-Teruel and Martínez-Solano, 2010). Unlike large firms, SMEs have limited ability and resources to make marketing, thereby they are willing to provide trade credit to their customers in order to increase sales.

5. 3. Data and Methodology

5.3.1 Data collection

To investigate the relationship between financial development and trade credit supply by SMEs, similar with the previous chapter, this research obtains firm-level financial data from the World Bank Enterprise Survey (WBES) dataset which provides information on the access to finance of an economy's private sector. To evaluate the level of financial development, I collect country-level information from World Development Indicator (WDI). Additionally, all firm and country-level information for control variables estimated in this chapter are also available from WBES and WDI, respectively.

As explained in the last chapter, in order to ensure the data consistency, this research relies on the standardised dataset from 2006 to 2016, which contains 101,163 SMEs cross 134 countries. Since the available information is not complete for all firm, totally, the number of observations for this chapter is 95,301. Additionally, I lose some observations when matching sample firms with country-level information and

classification. Accordingly, the number of observations in different regressions varies based on the chosen specifications. Distributions of SME between countries and years are provided in Appendix 5-1.

5.3.2 Measuring trade credit supply

Trade credit supply represents that a supplier is willing to extend credit for which it does not demand payment at or before delivery (Giannetti et al., 2011). Following existing literature (Martínez-Sola et al., 2014; Bussoli and Marino, 2018; Giannetti et al., 2011), I use receivables as a proxy to estimate trade credit supply. Hence, the main dependent variable is the percentage (%) of trade credit receivable in total annual sales by firm *i* in country *j* at year *t*. Based on the information available in WBES database, when constructing dependent variable, I use the survey question: "in fiscal year, what percentage of this establishment's total annual sales of its goods or services was sold on credit?". More specifically, the main development variable is the percentage of sales sold on credit (*TC_Receivable*).

5.3.3 Measuring the level of financial development

As mentioned in the last chapter, I use three indictors to measure the level of financial development for each country. Following King and Levine (1993) and Hermes et al. (2009), the ratio of liquid liabilities to GDP ($FD_{LL/GDP}$) as the primary indicator of financial development is adopted in this empirical analysis. Additionally, I also employ alternative indictors of financial development to replace the ratio of liquid liabilities to

GDP in robustness tests, including the ratio of domestic credit to private sector to GDP ($FD_{PC/GDP}$) and the ratio of stock market total value trade to GDP ($FD_{ST/GDP}$).

5.3.4 Measuring legal system

The volume of credit offered by suppliers is associated not only with the capability to provide credit/ firm's balance sheet position, but also with the ability to recover debt from customers. SMEs face higher risk of bankruptcy than large firms, in case of default; hence, they would be concerned with the limited ability to repossess the goods. In this chapter, I also consider the moderating role played by legal system in the effect of financial development on SMEs' trade credit supply. As discussed in previous chapter, following La Porta et al. (1998), I categorise sample countries according to the legal origin to measure legal environment, including common law (24% sample countries), civil law (53%) or other (24%) legal system.

5.3.5 Control variables

In the baseline and subsequent analyses, I set a variety of firm and country characteristics that may affect the volumes of trade credit provided by SMEs as control variables. In accordance with literature on the trade credit theories, firm characteristics, such as *size* (Klapper et al., 2011), *age* (Lawrenz and Oberndorfer, 2018), *sale* (McGuinness et al., 2018) and *trade credit received* (Shenoy and Williams, 2017) are consistently found to be associated with trade credit for SMEs.

Based on the financial motives, on the one hand, smaller firms face more financial constraints and higher liquidity risk, and the financial constraints would limit their

capacity to extend trade credit. Larger firms have better access to capital markets in terms of availability and cost, and some related empirical researches, such as Petersen and Rajan (1997) and Mian and Smith Jr (1992), suggest that there is a positive relationship between firm size and the capability of extending trade credit. On the other hand, in conjunction with the commercial motive, compared to larger firms with more established reputations, smaller firms that have worse reputations need to provide more trade credits so as to assure their product quality (Long et al., 1993). Hence, extending trade credit is associated with firm size. Similarly, firm age as a signal of reputations is also a possible determinant of trade credit supply. Furthermore, existing literature provides evidence that firms may adopt combination of the short-term assets (trade receivable) and short-term liabilities (trade payable) at the same time (Deloof and Jegers, 1996; Fabbri and Klapper, 2008). Hence, inspired by Bussoli and Marino (2018) and Shenoy and Williams (2017), I use "percentage of value of total annual purchases of material inputs or services was purchased on credit" (*TC_Payable*) to measure the amount of trade credit received and expect a positive relation between trade credit receivable (*TC_Receviable*) and trade credit payable (*TC_Payable*). Following McGuinness et al. (2018) who focused on the usage of trade credit in European countries and SME survival, I also control for *GDP per capital* as an indicator of general condition of economic activity and *Worldwide Governance* as country-level indicators of governance. Finally, I control for year and industry fixed effects. The details of variable definitions and explanations are reported in Appendix 5-1.

5.3.6 Baseline specification

This chapter aims to investigate the relationship between financial development and trade credit provided by SMEs measured by *TC_Receivable*. The main empirical specification I estimate is:

$$TC\_Receivable_{i,j,t} = \partial + \beta_1 Financial\ development_{j,t} + \beta_2 TC\_Payable_{i,j,t} + \beta_3 Sale_{i,j,t} + \beta_4 \text{Firm } Age_{i,j,t} + \beta_5 GDP\ per\ capita_{j,t} + \beta_6 GovIndex_{j,t} + Year_t + Industry_k + \varepsilon_{i,j} \quad \text{Eq. (5.1)}$$

where *i, j, t* and *k* represent firm, country, year and industry respectively. *TC_Receivable* $_{i,j,t}$ is the measure of trade credit supplied by firm *i* in country *j* to its customers in year *t* captured by the percentage of total annual sales was sold on credit. *Financial development* $_{j,t}$ is country *j*'s degree of financial development in year *t*, captured by liquid liabilities to GDP ($FD_{LL/GDP}$) in baseline and by both domestic credits to provide sector to GDP ($FD_{PC/GDP}$) and stock market total value trade to GDP ($FD_{ST/GDP}$) in robustness tests. Control variables are those firm and country-level characteristics in the regression that are predicted to affect the supply level of trade credit. $Year_t$ and $Industry_k$ are measures of year and industry fixed effects respectively to control for time or industry-specific trend.

5.3.7 Descriptive statistics

Table 5-1 presents the descriptive statistics for all variables used in this empirical analysis. The sample in WBES initially includes 101,163 SMEs across 134 countries during 2006-2016. However, because of the missing of core variables (e.g. *TC_Receivable,*

TC_Payable), the final sample of this analysis comprises a maximum of 56,099 firm-years observations. Panel A reports the descriptive of the dependent variable, i.e. the level of trade credit supplied by SMEs to their customers, and Panel B shows the variables regarding the characteristics of country and sample firm. As shown, averagely, 40.71% of total annual sales of goods or services by SMEs was sold on credit. Meanwhile, on average, sample firms have bout 37.56% of value of total annual purchases of material inputs or services purchased on credit. Numerically, SMEs supply trade credit to their customers more than the credit received from their suppliers. Moving to the main independent variables, Panel B reports $FD_{LL/GDP}$ ranges from 0.05 to 2.26 with an average of 0.47 and a standard deviation of 0.31. Similarly, $FD_{PC/GDP}$ has an average of 0.40, ranging from 0.02 to 1.60. The mean value of financial development indicates that most of samples operate in developing countries.

Table 5-2 reports the correlation matrix of dependent and independent variables. It evidently reveals a positive relationship between the percentage of trade credit supplied by SMEs and the level of financial development. Statistically, the correlation coefficients between *TC_Receivable* and three indicators measured financial development ($FD_{LL/GDP}$, $FD_{PC/GDP}$ and $FD_{ST/GDP}$) are1.1619, 0.1883 and 0.1727 respectively and all significantly at the 1% level.

Table 5-1: Descriptive statistics

This table reports the summary statistics of all variables used in the following empirical analysis, including those used in robustness tests. The sample collected is from 2006 to 2016 from 134 countries. Panel A reports the dependent variable to measure the trade credit supplied by SMEs to their customers. Panel B presents the variables that may affect the level of trade credit supply from both country and firm-levels. Detailed variable definitions and sources are shown in Appendix 5-1.

Variable	Obs.	Mean	Std. Dev.	Min	Max
Panel A: Dependent Variable					
TC_Receivable	95,301	40.71	37.81	0	100.00
Panel B: Independent Variables					
Firm level characteristics					
TC_Payable	73,638	37.56	37.15	0	100.00
Small size	101,163	0.58	0.49	0	1.00
Sale (log)	87,878	16.28	2.94	0	31.64
Age (log)	99,640	2.59	0.72	0	5.42
Country level characteristics					
FD_LL/GDP	91,106	0.47	0.31	0.05	2.26
FD_PC/GDP	96,248	0.40	0.30	0.02	1.60
FD_ST/GDP	61,662	0.15	0.18	0.00	0.86
GDP per capital (log)	99,764	7.97	1.11	5.04	10.98
GovIndex	100,264	-0.41	0.63	-1.90	1.74

Table 5-2: Correlation matrix of dependent and independent variables

	Variables	1	2	3	4	5	6	7	8	9	10
1	TC_Receivable	1									
2	TC_Payable	0.5346***	1								
3	Small size	-0.1534***	-0.1266***	1							
4	Sale (log)	0.0795***	0.0695***	-0.2710***	1						
5	Age (log)	0.1204***	0.1220***	-0.1800***	0.0593***	1					
6	$FD_{LL/GDP}$	0.1619***	0.1481***	-0.1133***	-0.0596***	0.0755***	1				
7	$FD_{PC/GDP}$	0.1883***	0.1930***	-0.1250***	0.0025	0.0761***	0.6827***	1			
8	$FD_{ST/GDP}$	0.1727***	0.1976***	-0.0975***	0.0182***	0.0081**	0.03713***	0.5589***	1		
9	GDP per capital (log)	0.2238***	0.2373***	-0.0670***	-0.1139***	0.1119***	0.2523***	0.4442***	0.0550***	1	
10	GovIndex	0.2257***	0.2293***	-0.0673***	-0.0424***	0.1600***	0.2402***	0.5018***	0.1287***	0.5777***	1

5.4. Empirical Results

5.4.1 Financial development and trade credit supplied by SMEs: baseline results

Table 5-3 reports the estimation results for Eq. (5.1) demonstrating the effects of financial development on the level of trade credit supplied by SMEs measured by the percentage of total sales was sold on credit. Model 1 reports the OLS regression result. Tobit regression has been applied as well, reported by Model 2 to address the issue where *TC_Receivable* is 0.

As shown in Table 5-3, the result establishes that the coefficients of $FD_{LL/GDP}$ are positive and statistically significant at 1% level across both regression models. In specific, the results provide clear evidence that with a greater level of financial development, SMEs would provide more trade credits to their customers. Economically, the estimated coefficient suggests that, an increase of $FD_{LL/GDP}$ by one standard deviation (0.31) would result in 2.86% increase in *TC_Receivable*, which has a mean of 40.71% and a standard deviation of 37.81%. The finding suggests that financial development affects the redistribution of loans via trade credit in SME credit market. In particular, SMEs located in a more developed financial systems and markets are expected to have better access to bank credit or other formal financial institutions credit and thereby are more likely to redistribute loans borrowed from formal financial institutions by adjusting their trade credit policy. This finding is consistent with Deloof and La Rocca (2015), who focusing on Italian SMEs, suggest that with local banking development, SMEs provide more trade credit to their customers.

Besides, the results of other control variables are basically consistent with expectations. The empirical results reported in Table 5-3 indicate that the amount of trade

credit received (*TC_Payable*), sales, firm age and the general condition of economic activity (*GDP per capita*) are positively related to the supply of trade credit; while the smaller firm size would negatively affect the percentage of supply of trade credit. For example, the estimated coefficient of *TC_Payable* is positive and statistically significant at 1% level, verifying that trade credit received from suppliers of SMEs match trade credit offered to their customers (Bastos and Pindado, 2013). The negatively estimated coefficient of *Small* suggests that the supply of trade credit is associated with the ability of firms to access other financial sources (Bussoli and Marino, 2018) due to the limited ability of accessing external finance by small firms.

In summary, this analysis provides clear evidence that SMEs operating in countries with a greater level of financial development would provide more trade credits to their customer.

Table 5-3: Financial development and trade credit supply

This table shows coefficients and standard errors (in parentheses) for Eq. (5.1) for all samples to explore how financial development affects the supply of trade credit by SMEs to their customers. Specifically, the dependent variable measuring the supply of trade credit provided by SMEs is the percentage of sales was sold on credit (*TC_Receivable*). The main independent variable is the level of financial development, measured by liquid liabilities to GDP ($FD_{LL/GDP}$). Model 1 presents the OLS regression results and Model 2 reports the Tobit regression results. All estimations control for industry and year fixed effect and include a full set of control variables. The regressions are run with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	OLS	Tobit
	(1)	(2)
VARIABLES	*TC_Receivable*	*TC_Receivable*
$FD_{LL/GDP}$	9.2126***	11.5678***
	(0.4451)	(0.5909)
TC_Payable	0.4744***	0.6102***
	(0.0037)	(0.0050)
Small size	-2.7836***	-3.6149***
	(0.2808)	(0.3748)
Sale (log)	0.5035***	0.6883***
	(0.0503)	(0.0677)
Age (log)	0.9280***	1.6342***
	(0.0.1881)	(0.2536)
GDP per capita (log)	2.0779***	2.4507***
	(0.1852)	(0.2503)
GovIndex	3.0937***	4.3262***
	(0.2931)	(0.3976)
Year Fixed Effect	Yes	Yes
Industry Fixed Effect	Yes	Yes
Constant	-14.3152***	-29.3920***
	(2.3480)	(2.6531)
Observations	56,099	56,099
R-squared	0.3511	
Adj (/Pseudo) R_2	0.3510	0.0506
F-statistic	1896.85***	
Chi2 Statistics		23258.87***

5.4.2 Robustness tests

In this section, following the similar strategies adopted in Chapter 4, I conduct a set of robustness tests for the baseline finding regarding the role played of financial development in the supply of trade credit by SMEs. The results indicate that the indictors of financial development in all specifications are positive and statistically significant,

implying that the baseline result on the effect of financial development on the supply of trade credit is robust.

5.4.2.1 Alternative sampling

Existing literature has identified various firm size effects on corporate trade credit behaviour (Lawrenz and Oberndorfer, 2018). Fabbri and Klapper (2016), for example, have found that supplier's bargaining power is a determinant of the supply of trade credit, and in fact, large firms have greater bargaining power in customer-supplier relationships than smaller firms (Klapper et al., 2011). This analysis initially indicates that financial development improves SMEs to provide more trade credit to their customers. In this section, I further explain whether the effects of financial development on the supply of trade credit vary with firm size. To address this concern, I re-estimate Eq. (5.1) by grouping the sample into different firm sizes: small, medium, and large firms according to number of employees. In addition, at the bottom of models, I present results testing for the differences in the coefficients for different firm sizes.

Table 5-4 reports the estimation results by categorising firm sizes. Models 1-3 and Models 4-6 report the OLS and Tobit results, respectively. The coefficients of $FD_{LL/GDP}$ in all models are positive and statistically significant, suggesting that financial development significantly affects the supply of trade credit for all-sized firms. Specifically, the coefficient of $FD_{LL/GDP}$ in Model 1 is nearly three times greater than that in Model 3. Empirically, an increase of $FD_{LL/GDP}$ by one standard deviation (0.31) would contribute to the increase of trade credit supply by 3.51% for small firm, 2.26% for medium-sized firm and 1.00 % for large firm. T test results for differences in the coefficients for small versus medium-sized firms and medium versus large firms are all

statistical significance at the 1% level, suggesting that the variation of the effects is statistically meaningful. Overall, the results verify the beneficial effects of financial development on providing trade credit by different firm sizes and suggest that small firms benefit more from financial development than large firms in terms of their capability of extending trade credits to customers.

Table 5-4: Robustness Tests: Alternative sampling

This table reports the results of robustness tests of Eq. (5.1) over firm sizes. Models 1-3 report OLS results and Models 4-6 present Tobit results. Firm size is defined as small (<20), medium (20-99) and large (100 and over) based on number of employees. The dependent variable is the percentage of sales was sold on credit (*TC_Receivable*). All estimations include year and industry fixed effects and a full set of control variables. T test results for differences in the coefficients for small versus medium-sized firm and medium verses large firm are reported at the bottom of models. The regressions are run with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	OLS			Tobit		
	Small size	Medium size	Large size	Small size	Medium size	Large size
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*
$FD_{LL/GDP}$	11.3231***	7.2773***	3.1960***	14.6237***	8.7858***	3.9308***
	(0.6035)	(0.6722)	(0.9775)	(0.8493)	(0.8295)	(1.1690)
TC_Payable	0.4649***	0.4839***	0.4950***	0.6267***	0.5892***	0.5925***
	(0.0049)	(0.0057)	(0.0077)	(0.0070)	(0.0071)	(0.0094)
Sale (log)	0.4262***	0.5698***	0.1048	0.6423***	0.6855***	0.1049
	(0.0655)	(0.0789)	(0.1013)	(0.0939)	(0.0980)	(0.1216)
Age (log)	1.1450***	0.5681*	0.7288*	1.9611***	1.0413***	1.3167***
	(0.2429)	(0.2975)	(0.3764)	(0.3492)	(0.3696)	(0.4529)
GDP per capita (log)	1.6518***	2.4879***	3.6249***	2.0142***	2.6153***	4.6697***
	(0.2338)	(0.3084)	(0.4600)	(0.3358)	(0.3848)	(0.5553)
GovIndex	3.4360***	2.5615***	4.5318***	4.8222***	3.8045***	5.5391***
	(0.3642)	(0.4994)	(0.7628)	(0.5255)	(0.6248)	(0.9168)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	8.6449***	2.3721	11.4066*	-30.3290***	-28.2078***	-26.4560***
	(2.8797)	(4.0594)	(6.9173)	(3.4637)	(4.0265)	(5.5939)
Observations	32,380	23,719	13,216	32,380	23,719	13,216
R-squared	0.3272	0.3428	0.3720			
Adj (/Pseudo) R_2	0.3269	0.3424	0.3713	0.0476	0.0475	0.0520
F-statistics	1049.22***	824.17***	521.21***			
Chi2 Statistics				11966.88***	9839.24***	61261.20
P-value	*0.000*			*0.000*		
		0.000			*0.000*	

5.4.2.2 Alternative measures of financial development

The validity of indicator adopted may affect the robustness of empirical results and to examine the robustness of the initial finding, I consider two alternative proxies for financial development, including the ratio of domestic credit to private sector to GDP ($FD_{PC/GDP}$) and the stock market total value traded to GDP ($FD_{ST/GDP}$)[4]. Results are shown in Table 5-5 where $FD_{PF/GDP}$ is employed in Models 1 and 3, and $FD_{ST/GDP}$ is used in Models 2 and 4. The coefficients of $FD_{PC/GDP}$ and $FD_{ST/GDP}$ are positive and significantly significant at 1% level in all models. Quantitatively, one standard deviation increased of $FD_{PC/GDP}$ (0.30) and $FD_{ST/GDP}$ (0.18) would increase the capability of SMEs to extend additional trade credit by 1.93% and 1.84%, respectively. The results show clear evidence of the favourable effects of financial development ($FD_{PC/GDP}$ and $FD_{ST/GDP}$) on the supply of trade credit by SMEs, confirming that the baseline finding is not subject to the method of how financial development is measured.

[4] See more discussion on both alternative measures in Chapter 4.

Table 5-5 Robustness Test: Alternative financial development measures

This table reports coefficients and standard errors (in parentheses) for robustness tests of alternative measures of financial development, where Models 1 and 3 measure the financial development by the ratio of domestic credit to private sector to GDP ($FD_{PC/GDP}$), and Models 2 and 4 adopt the stock market total value trade to GDP ($FD_{ST/GDP}$) as the indicator of financial development. The specifications are estimated by employing OLS regression (Modes 1 and 2) and Tobit regression (Models 3 and 4). All estimations control for industry and year fixed effect and include a full set of control variables. The regressions are run with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	OLS		Tobit	
	(1)	(2)	(3)	(4)
VARIABLES	TC_Receivable	TC_Receivable	TC_Receivable	TC_Receivable
$FD_{PC/GDP}$	6.4343***		8.6966***	
	(0.5124)		(0.6840)	
$FD_{ST/GDP}$		10.2175***		10.4131***
		(0.9786)		(1.2660)
TC_Payable	0.4803***	0.4800***	0.6209***	0.6065***
	(0.0036)	(0.0044)	(0.0048)	(0.0057)
Small size	-2.9034***	-1.4992***	-3.8183***	-1.9930***
	(0.2703)	(0.3245)	(0.3630)	(0.4192)
Sale (log)	0.4624***	0.7928***	0.6167***	0.9926***
	(0.0468)	(0.0609)	(0.0634)	(0.0789)
Age (log)	1.0072***	0.4949**	1.6703***	0.8132***
	(0.1828)	(0.2256)	(0.2479)	(0.2933)
GDP per capita (log)	1.3595***	-0.4592*	1.4602***	-0.9317***
	(0.1838)	(0.2698)	(0.2492)	(0.3497)
GovIndex	3.3889***	7.0421***	4.6515***	9.5835***
	(0.3034)	(0.4229)	(0.4142)	(0.5527)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Constant	14.6550	18.2977***	-31.9197***	-12.9571***
	(2.3165)	(3.2134)	(2.7736)	(3.7860)
Observations	60,175	40,813	60,175	40,813
R-squared	0.3449	0.3567		
Adj (/Pseudo) R_2	0.3447	0.3565	0.0496	0.0510
F-statistic	1863.12***	1413.89***		
Chi2 Statistics			24378.07	17569.55

5.4.2.3 Alternative specification of financial development

Corporate finance literature has indicated the potential endogeneity problems in financial decisions when using cross-sectional information due to the possible causal issue. As for the alternative robustness test, I follow Martínez-Sola et al. (2014) and consider the effect of the lagged value of the independent variable. In specific, I introduce one-year and

two-year lagged values of liquid liabilities to GDP as alternative specification to explore the effects of financial development on the capability of SMEs to extend trade credit.

Results are reported in Table 5-6. Models 1 and 3 employ one-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-1}$) to measure the level of financial development. Models 2 and 4 use two-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-2}$). As reported, the positive and significant coefficients of both lagged values in all models provide clear evidence supporting the favourable role played by financial development in the capability of SMEs to extend trade credit, which is consistent with the baseline finding[5]. To gauge the economic significance, SMEs in countries with improved financial development by one standard deviation (0.31) in last year, would generate additional trade receivable of 2.67%.

[5] The results on the effects of lagged value of alternative measures for financial development are consistent with that of using a liquid liability to GDP ratio. Results are not reported but available on request from the author.

Table 5-6: Robustness Tests: Alternative specification of financial development

This table reports the results for robustness tests of Eq. (5.1) by using alternative specification of financial development. The independent variables in Models 1 and 3 are the one-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-1}$), Models 2 and 4 employ the two-year lagged value of liquid liabilities to GDP ($FD_{LL/GDPt-2}$). All estimations control for industry and year fixed effects and include a full set of control variables. The regressions are run with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	OLS		Tobit	
	(1)	(2)	(3)	(4)
VARIABLES	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*
$FD_{LL/GDPt-1}$	8.6048***		11.2184***	
	(0.4222)		(0.5644)	
$FD_{LL/GDPt-2}$		8.0904***		10.5273***
		(0.4080)		(0.5451)
TC_Payable	0.4805***	0.4794***	0.6212***	0.6195***
	(0.0036)	(0.0036)	(0.0049)	(0.0049)
Small size	-2.7045***	-2.7112***	-3.5747***	-3.5881***
	(0.2717)	(0.2712)	(0.3643)	(0.3638)
Sale (log)	0.5450***	0.5489***	0.7246***	0.7310***
	(0.0476)	(0.0474)	(0.0642)	(0.0640)
Age (log)	0.9160***	0.9270***	1.5234***	1.5261***
	(0.1856)	(0.1852)	(0.2508)	(0.2504)
GDP per capita (log)	1.6387***	1.7155***	1.8678***	1.9667***
	(0.1846)	(0.1847)	(0.2503)	(0.2506)
GovIndex	3.4546***	3.6088***	4.8163***	5.0351***
	(0.2970)	(0.2977)	(0.4035)	(0.4047)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Constant	10.7016***	10.3350***	-39.6364***	-39.5770***
	(2.3347)	(2.3374)	(2.8185)	(2.8176)
Observations	59,308	59,540	59,308	59,540
R-squared	0.3439	0.3426		
Adj (/Pseudo) R_2	0.3437	0.3424	0.0495	0.0493
F-statistic	1828.25***	1824.72***		
Chi2 Statistics			24018.73***	23984.64***

5.4.3 Additional Test: the moderating effects of legal system, financial crisis and product market

The results so far have shown a favourable and robust effect of financial development on the supply of trade credit by SMEs. In this section, I further explore the possible factors which would moderate such an effect.

5.4.3.1 Common law vs. Civil law

Existing studies have investigated the role of legal origin of country in explaining corporate finance (Demirgüç-Kunt and Levine, 2005). SMEs providing trade credit not only consider the financial capability, but also regard the ability to recover debt. Hence, I further explore how the financial and legal environment at country level would affect the supply of trade credit by SMEs. As discussed in Chapter 4, the sample countries are classified by legal systems into two groups, including common law and civil law countries. Table 5-7 shows results of subsamples for estimations of Eq. (5.1). In addition, t tests for the differences in the coefficients of financial development for common law versus civil law countries are shown at the bottom of models, which are statistically significant at 1% level.

The positive and significant coefficients of $FD_{LL/GDP}$ in all models indicate that legal systems play an important role in moderating the effect of financial development on the level of trade credit supplied by SMEs. In comparison, the economic magnitude of the coefficient of $FD_{LL/GDP}$ is much greater in common law countries (Model 1) than that in civil law countries (Model 2). More specifically, the coefficient of $FD_{LL/GDP}$ on *TC_Receivable* in common law countries is 33.15 (as shown in Model 1, Table 5-7), comparing with 9.21 in all sample countries (as shown in Model 1, Table 5-3) and 7.93 in civil law countries (as shown in Model 2, Table 5-7). Quantitatively, the marginal effect suggests that with an increase of $FD_{LL/GDP}$ by one standard deviation (0.31), SMEs as supplier would be willing to extend additional trade credit by 10.28% and 2.46% in common law and civil law countries, respectively. Such a finding suggests that SMEs in common law countries have a greater propensity to provide trade credit than those in civil law countries, consistent with existing studies that firms operating in countries with

stronger creditor rights apply a more flexible liquidity management strategy (Lei et al., 2018).

Table 5-7: Additional Tests: Financial development and trade credit supply by SMEs varies legal systems

This table presents the results of how financial development affects the capability of SMEs to extend trade credit in different legal environments. The sample countries are divided into common law and civil law countries. Models 1 and 3 report the results of subsample in common law countries. Models 2 and 4 report the results of subsample in civil law countries. All estimations control for industry and year fixed effects and include a full set of control variables. T tests for differences in the coefficients for common law versus civil law countries are at the bottom of models. The regressions are run with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	OLS		Tobit	
	Common law	Civil law	Common law	Civil law
	(1)	(2)	(3)	(5)
VARIABLES	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*
$FD_{LL/GDP}$	33.1475***	7.9287***	38.8262***	10.4306***
	(1.2489)	(0.5423)	(1.6611)	(0.7186)
TC_Payable	0.4533***	0.4576***	0.5783***	0.5923***
	(0.0062)	(0.0053)	(0.0082)	(0.0071)
Small size	0.8057*	-3.5977***	1.0390*	-4.9471***
	(0.4348)	(0.4125)	(0.5758)	(0.5482)
Sale (log)	0.5771***	0.4493***	0.5118***	0.7551***
	(0.0967)	(0.0688)	(0.1291)	(0.0921)
Age (log)	1.3518***	0.3920	2.0263***	1.0402
	(0.2811)	(0.2910)	(0.3730)	(0.3912)
GDP per capita (log)	-0.2643	4.0707***	-1.3531***	6.4160***
	(0.3361)	(0.3173)	(0.5000)	(0.4345)
GovIndex	3.5993***	2.8785***	5.7067***	3.6884
	(0.5555)	(0.4768)	(0.7476)	(0.6388)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Constant	-13.8785***	-18.0520***	-20.1279***	-48.8537***
	(4.0530)	(3.8597)	(5.0461)	(5.1956)
Observations	20,560	27,610	20,560	27,610
R-squared	0.3996	0.3417		
Adj (/Pseudo) R_2	0.3992	0.3413	0.0620	0.0497
F-statistics	976.78***	954.83***		
Chi2 Statistics			10071.66***	11437.91***
P-value	*0.000*		*0.000*	

5.4.3.2 Financial crisis vs. non-financial crisis

Prior empirical studies have focused on the effects of financial crisis on the use of trade credit and shown that trade credit is an important source of external finance during financial crisis for SMEs due to the increased difficulties of these firms in accessing capital market (Carbo-Valverde et al., 2016; Bastos and Pindado, 2013; McGuinness et al., 2018). However, less is focused on financial decisions of SMEs as financial intermediator, or trade credit suppliers, during financial crisis. To shed light on the differential impacts of financial development on the supply of trade credit within different financial periods, following the same strategy employed in Chapter 4, I re-estimate the baseline specification (Eq. 5.1) across subsamples and define *financial crisis* as a period between 2007 and 2009, and *after crisis* as between 2010 and 2016.

Table 5-8 presents the effects of financial development on the supply of trade credit by SMEs during financial crisis (Models 1 and 3) and after financial crisis (Models 2 and 4)[6]. The coefficient of $FD_{LL/GDP}$ remains positive and statistically significant across all models. Specifically, the coefficient of $FD_{LL/GDP}$ on *TC_Receivable* during financial crisis (Model 1) is greater than that after financial crisis (Model 2), suggesting that financial development plays a much more important role in mitigating the adverse effects of financial crisis on SMEs by improving the capability of SMEs to extend trade credit during financial crisis than the effect after financial crisis.

Overall, the results show clear evidence that the decisions of SMEs on the supply of trade credit are more sensitive to the degree of financial development during financial crisis than that after financial crisis. During financial crisis, firms are more likely to face

[6] The mean value of *TC_Receivable* in financial crisis (after financial crisis) is 42.42% (39.06%) and the mean value of *TC_Payable* in financial crisis (after financial crisis) is 38.45% (37.27%). T test on group mean differences is statistically significant at 1% level.

financing constraints; hence, SME as supplier could be forced to provide credit to their customers. As suggested in Chapter 4, financial development would improve SMEs to access external finance, thereby increases the financial capability of SMEs to extend trade credit to their customers.

Table 5-8: Additional Tests: Financial development and trade credit supplied by SMEs varies financial period

This table reports the results of Eq. (5.1) over different period. Models 1and 3 and Models 2 and 4 report the results in financial crisis (between 2007 and 2009) and after financial crisis (between 2010 and 2016) period, respectively. Models 1 and 2 report the results of OLS regression, and Models 3 and 4 report the results of Tobit regression. All estimations control for industry fixed effects and include a full set of control variables. T test for differences in the coefficients for financial crisis versus after financial crisis is at the bottom. The regressions are run with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	OLS		Tobit	
	Fin_crisis	Aft_crisis	Fin_crisis	Aft_crisis
	(1)	(2)	(3)	(5)
VARIABLES	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*	*TC_Receivable*
$FD_{LL/GDP}$	27.2344***	7.6452***	35.0343***	10.1841***
	(1.3188)	(0.4105)	(1.9072)	(0.5246)
TC_Payable	0.4276***	0.5052***	0.5766***	0.6378***
	(0.0067)	(0.0044)	(0.0098)	(0.0057)
Small size	-4.9933***	-1.8463***	-7.2821***	-2.1594***
	(0.5587)	(0.3226)	(0.8073)	(0.4174)
Sale (log)	0.3862***	0.6973***	0.5893***	0.9331***
	(0.0905)	(0.0589)	(0.1312)	(0.0771)
Age (log)	1.5973***	0.5556***	2.5087***	0.9994***
	(0.3513)	(0.2197)	(0.5135)	(0.2865)
GDP per capita (log)	2.6052***	1.5252***	2.6713***	1.8655***
	(0.3778)	(0.1719)	(0.5566)	(0.2227)
GovIndex	0.1898	2.8627***	1.2740	3.1671***
	(0.6280)	(0.2826)	(0.9361)	(0.3671)
Industry Fixed Effect	Yes	Yes	Yes	Yes
Constant	-16.6604***	-8.8703***	-41.7345***	-30.5729***
	(3.7681)	(1.9788)	(5.5676)	(2.5740)
Observations	16,667	39,432	16,667	39,432
R-squared	0.3443	0.3540		
Adj (/Pseudo) R_2	0.3440	0.3538	0.0486	0.0510
F-statistics	971.89***	2399.99***		
Chi2 Statistics			6307.99***	16822.25***
P-value	*0.000*		*0.000*	

5.4.3.3 Domestic market vs. International market

In this chapter, I have shown that financial development improves SMEs ability to provide more trade credit to their customers. Focusing on SMEs' willingness to extend trade credit, the next question is which product market could benefit more from financial development in terms of supplying additional trade credit. To address this question, I use one survey question from WBES "in fiscal year, the main market in which this establishment sold its main product?" to distinguish product markets, including domestic market and international market.

Table 5-9, Model 1 (2), reports regression estimates that evaluate the effect of financial development on the supply of trade credit by SMEs facing domestic (international) market. As shown, the coefficient of $FD_{LL/GDP}$ has a larger magnitude and greater significance level in domestic market than that in international market. This further justifies a strengthened role of financial development in the supply of trade credit where firms face domestic product market. The marginal effect suggests that with an increased $FD_{LL/GDP}$ by one standard deviation (0.31), SMEs operating in domestic market as the main product market would increase 3.03% of *TC_Receivable* and 2.01% increase for those SMEs operating in international market. T test results for the differences in coefficients for both product markets are all statistically significant at 1% level. The findings provide clear evidence that the effect of financial development on affecting the redistribution of credit via trade credit is stronger if trade credit suppliers operate in domestic market than those in international market, suggesting that the development of informal credit (trade credit) is complementary to the development of formal financial institutions at the country level (Demirguc-Kunt and Marsimovic, 2001).

Table 5-9: Additional Tests: Financial development and trade credit supply by SMEs varies with different markets

This table reports the results of Eq. (5.1) over different markets, domestic market (Model 1 and 3) and international market (Model 2 and 4). All estimations control for industry and year fixed effects and include a full set of control variables. T test for the differences in the coefficients for domestic versus international market is reported at the bottom of the table. The regressions are run with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	OLS		Tobit	
	Domestic market	International market	Domestic market	International market
	(1)	(2)	(3)	(4)
VARIABLES	TC_Receivable	TC_Receivable	TC_Receivable	TC_Receivable
$FD_{LL/GDP}$	9.7620***	6.4707***	11.3904***	8.3964***
	(0.5599)	(2.1826)	(0.7116)	(2.7425)
TC_Payable	0.4945***	0.4749***	0.6126***	0.5798***
	(0.0048)	(0.0195)	(0.0061)	(0.0248)
Small size	-2.6201***	-3.6075**	-3.3117***	-3.6762*
	(0.3525)	(1.6768)	(0.4487)	(2.1163)
Sale (log)	0.6520***	-0.3844	0.9881***	-0.4867
	(0.0664)	(0.3011)	(0.0851)	(0.3772)
Age (log)	0. 8419***	-0.7328	1.2983***	-0.5291
	(0.2424)	(1.0579)	(0.3104)	(1.3310)
GDP per capita (log)	1.3815***	3.1509**	1.8118***	4.4195**
	(0.2652)	(1.4313)	(0.3408)	(1.8085)
GovIndex	4.0929***	7.1582***	4.6830***	8.2692***
	(0.4091)	(2.2356)	(0.5275)	(2.8199)
Year Fixed Effect	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes
Constant	8.4256**	-13.8137	-18.1291	-1.8666
	(4.0728)	(26.5634)	(3.6479)	(16.8819)
Observations	34,224	2,042	34,224	2,042
R-squared	0.3564	0.3341		
Adj (/Pseudo) R_2	0.3561	0.3288	0.0500	0.0451
F-statistics	1184.12***	63.50***		
Chi2 Statistics			14609.25***	806.80***
P-value	*0.000*		*0.000*	

5.4.3.4 Financial constraints vs. non-financial constraints

Existing literature has shown that trade credit as a buffer plays a useful role for financially constrained firms (Casey and O'Toole, 2014; Ferrando and Mulier, 2013). I further explore how financial development impacts on trade credit supply over the level of financial constraints. According to the survey question from WBES, I define financial constraints by the degree of access to finance as an obstacle, including no obstacle, minor obstacle and major obstacle.

Table 5-10 reports the results for estimations of Eq. (5.1) by grouping financial constraints in no obstacle (Model 1), minor obstacle (Model 2) and major obstacle (Model 3). The results are consistent with the baseline result, suggesting that the financial development improves SMEs to supply trade credit across each degree of financial obstacle. Quantitatively, the coefficients of $FD_{LL/GDP}$ suggest that, an increase of $FD_{LL/GDP}$ by one standard deviation (0.31) would generate the additional proportion of trade credit supplied by SMEs with minor financial obstacle by 2.95%, compared with a smaller marginal effect for SMEs with no obstacle (2.82%) and that with major obstacle (2.67%). This finding suggests that SMEs with minor financial obstacle are more sensitive to financial development than firms with no and major obstacle when providing trade credit to their customer. The probable reason to explain this finding is that, on the one hand, firms without financial obstacle have the capacity to provide credit but have less motive to supply credit to their customers. On the other hand, firms with major financial obstacle have greater motive to provide credit but are limited by their financial capacity.

Table 5-10: Additional Tests: Financial development and trade credit supply by SMEs varies with different financial constraints

This table reports the results of Eq. (5.1) on the variation of financial constraints faced by trade credit supplier SMEs. The sample SMEs are divided into three groups, including no obstacle (Modes l and 4), minor obstacle (Models 2 and 5) and major obstacle (Models 3 and 6). All estimations control for industry and year fixed effect and include a full set of control variables. T tests for differences in the coefficients for no versus minor obstacle, and minor versus major obstacle are reported at the bottom of the table. The regressions are run with heteroskedasticity-robust standard errors. *, ** and *** denote statistical significance at 10%, 5% and 1% level respectively.

	OLS			Tobit		
	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	TC_Receivable	TC_Receivable	TC_Receivable	TC_Receivable	TC_Receivable	TC_Receivable
FD$_{LL/GDP}$	9.1048***	9.5000***	8.6268***	11.7844***	11.2938***	11.7796***
	(0.8501)	(0.7052)	(0.8887)	(1.1430)	(0.9085)	(1.1785)
TC_Payable	0.4542***	0.4878***	0.4765***	0.5950***	0.6143***	0.6113***
	(0.0068)	(0.0058)	(0.0073)	(0.0093)	(0.0076)	(0.0098)
Small size	-3.0506***	-2.0611***	-3.9375***	-4.0279***	-2.8774***	-4.8848***
	(0.5462)	(0.4293)	(0.5521)	(0.7362)	(0.5544)	(0.7371)
Sale (log)	0.7362***	0.5234***	0.3317***	1.1761***	0.6358***	0.4178***
	(0.0990)	(0.0791)	(0.0927)	(0.1351)	(0.1029)	(0.1249)
Age (log)	1.1340***	0.4788**	1.1288***	1.7305***	1.1752***	1.8853***
	(0.3752)	(0.2931)	(0.3513)	(0.5113)	(0.3815)	(0.4743)
GDP per capita (log)	2.6477***	1.8587***	2.3842***	3.4342***	2.2567***	2.8590***
	(0.3967)	(0.2911)	(0.3455)	(0.5442)	(0.3800)	(0.4662)
GovIndex	2.4870***	2.9377***	2.2958***	3.6531***	3.8874***	3.4413***
	(0.6399)	(0.4723)	(0.5255)	(0.8755)	(0.6184)	(0.7131)
Year Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.5490	9.6770***	3.1294	-46.2913***	-25.7771***	-28.0720**
	(4.19730)	(3.8004)	(4.1618)	(5.5532)	(4.0949)	(4.8020)
Observations	15,878	22,572	15,096	15,878	22,572	15,096
R-squared	0.3346	0.3578	0.3365			
Adi (/Pseudo) R_2	0.3340	0.3573	0.3358	0.0486	0.0512	0.0474
F-statistic	498.57***	785.26***	477.98***			
Chi2 Statistic				6348.00***	9701.00***	5830.18***
P-value	*0.000*			*0.000*		
		0.000			*0.000*	

5.5. Conclusion

Different from literature focusing on the trade credit demand by SMEs (e.g. McGuinness et al., 2018), this study analyses the impacts of financial development on the supply of trade credit by SMEs to their customers, and the results suggest favourable effects of financial development on the supply of trade credit by SME as financial intermediary. Firstly, the results show that in countries with a greater degree of financial development, SMEs are more likely to provide trade credit to their customers. The result confirms that the positive role played by financial development in affecting the redistribution of credit via trade credit in SMEs financing market. I also find that the trade credit supplied by smaller firms are more sensitive to the degree of financial development than the credit supplied by larger firms. Secondly, the results suggest legal system plays an important role in moderating the effects of financial development on the capability of SMEs to extend trade credit. For example, along with financial development, SMEs in common law countries have a greater propensity to provide trade credit than those from civil law countries. In addition, during financial crisis, financial development would contribute more to improve the supply of trade credit, compared with the effect after financial crisis. Thirdly, I show that such beneficial effects of financial development are stronger for those SMEs who are more sensitive towards changes in local financial development, such as those operating in domestic product market. Overall, this analysis suggests that, the degree of financial development and legal system have strong impacts on determination of the capability of SMEs to extend trade credit.

Overall, the results provide important implications. First, financial development improves the SMEs' willingness to provide credit to their customers through accessing more external finance. Second, compared with civil law, common law places a stronger

protection on private property right and therefore, SMEs would benefit more from financial development to provide trade credit. Third, the results show a strong link between financial market and product market where SMEs facing domestic market would benefit more from financial development than those operating in international market.

A limitation of this study is that information on the matched trade credit receivers is not available from the database and I call for future research when such information becomes available. I expect that the redistribution effect of trade credit could be greater if customers face financial constraints than those customers with no financial constraints. In addition, it would be interesting to examine whether financial development improves the access to external finance by SMEs and if suppliers and customers are located in same market, whether the customers prefer to use trade credit than borrowing from formal financial institutions.

Appendix 5-1: Variable definition

Variables	Definition	Original source
Firm Level		
TC_Receivable	% trade credit receivable in total annual sales	WBES
TC_Payable	% trade credit payables in total purchased account	WBES
Firm age (log)	Log value of total years that this firm has formally operations	WBES
Sale (Log)	Log value of last fiscal year's total sales	WBES
Small size	A firm is defined as small if it has between 5 and 19 employees.	WBES
Country Level		
$FD_{LL/GDP}$	Liquid liabilities to GDP where liquid liabilities are also known as broad money, or M3. They are the sum of currency and deposits in the central bank (M0), plus transferable deposits and electronic currency (M1), plus time and savings deposits, foreign currency transferable deposits, certificates of deposit, and securities repurchase agreements (M2), plus travellers checks, foreign currency time deposits, commercial paper, and shares of mutual funds or market funds held by residents.	WDI
$FD_{PC/GDP}$	Domestic credit to private sector to GDP and domestic credit to private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of nonequity securities, and trade credits and other accounts receivable, that establish a claim for repayment.	WDI
$FD_{ST/GDP}$	The value of shares traded to GDP and the value is the total number of shares traded, both domestic and foreign, multiplied by their respective matching prices.	WDI
GDP per capital (Log)	Log value of real per capital GDP	WDI
GovIndex	Governance Indicators which are produced by Worldwide Governance Indicators, including six dimensions of governance: control of corruption, government effectiveness, political stability and absence of violence, regulatory quality, rule of law and voice and accountability.	WGI

Chapter 6 Conclusion

6.1 Summary of the Study

Existing studies have attempted to investigate how financial development contributes to SME finance in terms of availability, price, financial services and products (e.g. Beck et al., 2008; Bittencourt, 2012). Following on existing research on the essential role played by financial development in the allocation of capital (e.g. Levine, 2005; Becker et al., 2012), this thesis investigates the impacts of financial development on SME finance by considering the moderating role of institutional framework in particular by using a comprehensive database from Work Bank with samples from 134 countries. Specifically, Chapter 3 provides literature review and some background statistics on financial development and SME finance especially in emerging economies. The following empirical chapters examine how financial development affects the selection of different sources of finance in financing both short term and long term projects by SMEs (Chapter 4) and the supply of trade credit by SMEs to their customers (Chapter 5).

Chapter 3 shows that first, both institutional framework and economic features differ significantly between emerging and developed economies, formal institutional norms are relatively weak compared with those in developed economies and hence, SMEs rely more heavily on informal institutions. Second, the differences hence in institutional framework are reflected in the operating obstacles faced by SMEs and their financing patterns in different emerging economies. Third, financial development plays an important role in alleviating financial constraints SMEs face in emerging economies. Chapter 4 examines the effects of financial development and institutional framework on

the access to external finance by SMEs. With better developed financial systems, SMEs are more likely to use formal sources of external finance obtained from bank and non-bank institutions than from informal sources of capital e.g. private finance, in terms of both short term (e.g. working capital) and long term (e.g. fixed assets investment) finance. In addition, the effects of financial development on the access to external finance for SMEs are stronger in those countries with a stronger investor protection, such as those common law countries, than in those civil law countries, highlighting the moderating role played by institutional framework on the effects of financial development on SME finance. These two chapters demonstrate the favourable role of financial development in improving the access to external finance by SMEs. Chapter 5 further analyses how financial development and institutions framework in the country where SMEs operate affect the supply of trade credit by SMEs to their customers. SMEs in those countries with a higher level of financial development provide more trade credit to their customers and vice versa, supporting the favourable effects of financial development on the supply of trade credit by SME as financial intermediary. The results also show that SMEs in common law countries have a greater propensity to provide trade credit than those in civil law countries, consistent with existing studies that firms operating in countries with stronger creditor rights apply a more flexible liquidity management strategy (Lei et al., 2018). This chapter also shows that the degree of financial development plays a much more important role in improving the supply of trade credit during financial crisis than after financial crisis period, further confirming the role played by financial development in the country where SMEs operate even with exogenous economic shocks.

In each empirical chapter, I conducted a set of robustness tests, including 1) alternative proxies for financial development in addition to liquid liabilities to GDP ($FD_{LL/GDP}$), such as the ratio of private credit to GDP ($FD_{PC/GDP}$) and stock trade total

value to GDP ($FD_{ST/GDP}$); 2) alternative sampling; and 3) alternative specification of financial development, such as on-year and two year lagged value of indicators. I also applied additional tests to explore the possible factors which would moderate such as effect. The primary results are consistent and robust to various empirical specifications and additional tests.

6.2 Implications of the Study

In conclusion, the results reported in this thesis demonstrate the favourable effects of financial development and institutional framework on SME finance in both demand (seeking finance) and supply (trade credit) of finance, providing additional empirical evidence to the research area of SME finance. The findings also provide several implications to policy makers, financial institutions and SME practitioners. First, policy makers, especially those in emerging and under-developed countries, should further improve the effectiveness of institutional frameworks by which SMEs could reduce the transaction costs in their operation. An efficient formal institutional framework would help SMEs standardise their operating activities, such as accounting information disclosure. Second, the empirical evidence on the increasingly important role played by non-bank institutions in providing finance for SMEs suggests that policy makers should further support non-bank institutions, which quickly diffuse across countries as the new alternative financing sources for small firms. This is important because promoting healthy competition between bank and non-bank institutions would be helpful in alleviating financial constraints for SMEs. Last, working as financial intermediary and credit suppliers in the markets, SME managers need to strategically develop a credit

supply plan by well manging both the demand for external finance and the supply of credits to customers for business and marketing purposes.

6.3 Limitations of the Study and Recommendations for Future Research

Nevertheless, there are some limitations in this thesis, and I call for future research when such information becomes available. First, Chapter 4 suggests that with a greater degree of financial development, SMEs are more likely to obtain external finance from bank and non-bank institutions. What is little known is, however, how a specific financial institution could improve the availability and reduce the costs of external finance for a particular SME customer. This is probably because such "one-to-one" matched bank-firm information is rarely available publicly; thereby, the thesis does not provide a whole picture to show if SMEs switch banks or other financial service providers with the development of financial markets. Therefore, upon the availability of such data, future research could examine how a SME selects a bank or non-bank institutions as its primary supplier of financial services and how such a match affects the decision makings of financial institutions when lending SMEs. Additionally, financial development contributes to SME finance obtained from bank and non-bank institutions by reducing information asymmetries, but how SMEs make decisions of accounting information disclosure is under studied, especially from a cross-country perspective. It is probably because many micro and small-sized firms are not regulated by governments in terms of accounting information disclosure and future research could consider how financial development and institutional framework affect SME accounting information disclosure and thereby affect their financial decision makings. A limitation of Chapter 5 is that information on the matched trade credit receivers is not available from the database. I

expect that the redistribution effect of trade credit could be greater if customers face financial constraints than those customers with no financial constraints.

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